DIESEL EQUIPMENT SUPERINTENDENT

The man responsible for the selection, performance and availability of his company's diesel equipment

December 1961
press run — 22,500

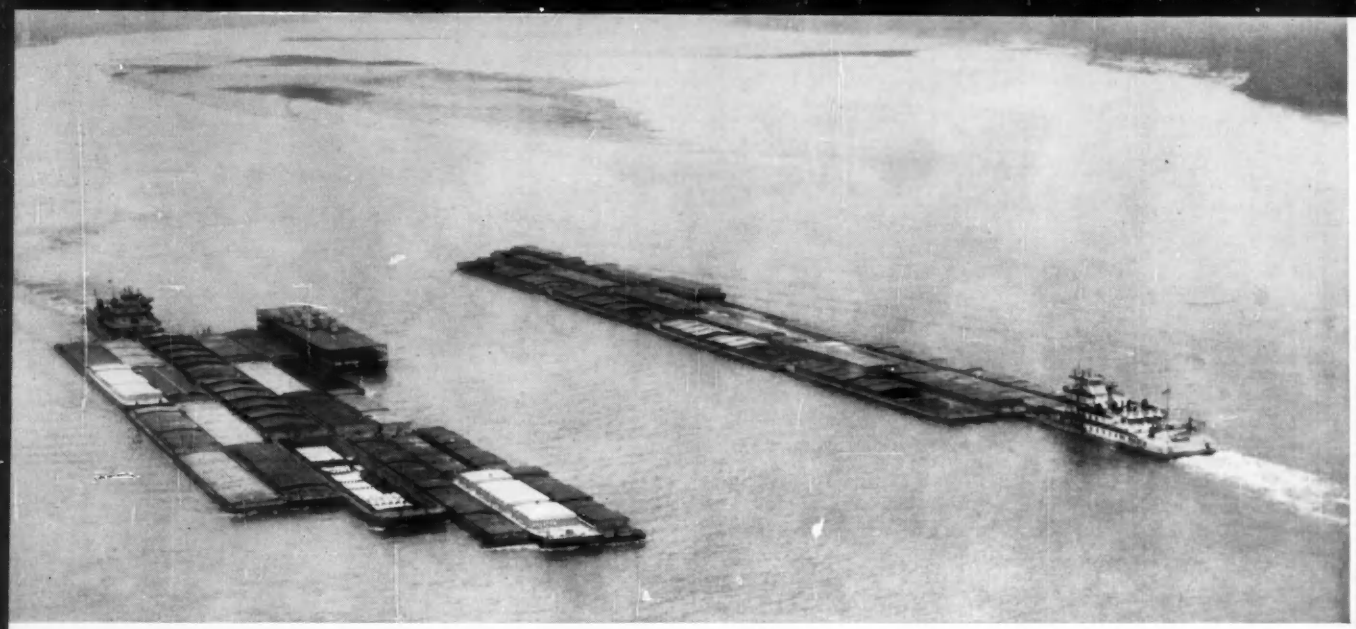
FLEET • CONSTRUCTION • INDUSTRIAL

this month's

EQUIPMENT SUPERINTENDENT

ROLAND SPENCER
General Equipment Superintendent
C. W. Blakeslee & Sons, Inc.

Formerly diesel power



MEET THE BIG THREE OF THE TOWBOAT WORLD

These three towboats, built by St. Louis Shipbuilding and Steel Company, are the world's three most powerful. They are powered by Cooper-Bessemer Turbocharged LS-8 engines... recognized everywhere for their stamina and reliability under rigorous 'round-the-clock duty. The upper photo shows Federal Barge Lines' 9000 hp M/V America (left) passing their 8500 hp M/V United States in the lower Mississippi. The lower photo shows the recently completed 6630 hp M/V Austen S. Cargill heading for service in the upper Mississippi for Cargo Carriers, Inc. Call Cooper-Bessemer for assistance in planning *your* marine power facilities.

Get the benefits of Cooper-Bessemer stamina and operating economy for vessels of *any* size.

Cooper Bessemer

GENERAL OFFICES: MOUNT VERNON, OHIO

COMPRESSORS · RECIPROCATING AND CENTRIFUGAL
ENGINES · GAS · DIESEL · GAS-DIESEL
JET-POWERED GAS TURBINES

■ Present-day river towboat operations demand nothing less than the best in reliability, efficiency and economy. ■ Among the "partners" making this possible on Union Barge Line's new craft are: Dravo Corp.—builder of the two towboats; Nordberg Mfg. Co.—builder of the diesel engines; and Scintilla Division, The Bendix Corporation—developer of the 24 injection pumps that feed fuel to the giant 3200-horsepower diesels. ■ Bendix® Fuel Injection is serving a variety of diesel engine needs efficiently—not only in the marine field, but in locomotive and stationary engines as well. Proof: more diesel engine manufacturers are specifying Bendix than ever before in history. ■ Get full details on Bendix Fuel Injection by writing The Bendix Corporation, Scintilla Division, Sidney, N. Y. Export Sales & Service: Bendix International, 205 E. 42nd St., New York 17, New York.

POWERFUL NEW TOWBOAT "TWINS" RELY ON BENDIX FOR FUEL INJECTION

Modern Mississippi River towboats operated by Union Barge Line, the Navigator and the Mariner are each powered by two Nordberg diesels and are each capable of pushing 30 or more loaded barges.

Scintilla Division THE Bendix CORPORATION

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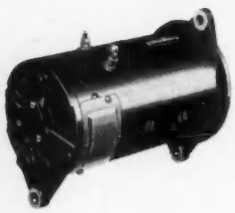
◀ *For information write in No. 1201*

KEEP YOUR OFF-THE-ROAD



HEAVY-DUTY, LONG-LIFE D.C. GENERATOR

- Double-length, double-life brushes with constant-tension springs
- Ball bearings with sealed grease reservoirs—need no lubrication between engine overhauls
- 50-ampere maximum output—available with 10-ampere output at engine idle
- Sealed field coils—impervious to moisture and corrosion

SELF-RECTIFYING A.C. GENERATOR

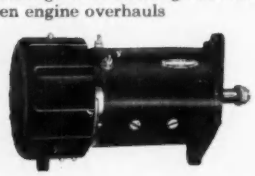
- Built-in silicon diodes eliminate external rectifier
- 30-ampere output at normal engine idle
- 60- or 85-ampere maximum output models available
- Ball bearings with sealed grease reservoirs—need no lubrication between engine overhauls

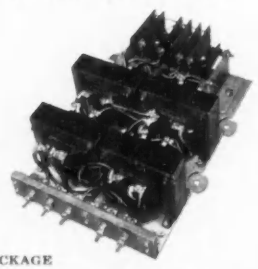
EXTRA-HIGH-OUTPUT A.C. GENERATOR

- 130-ampere maximum output
- 40 amperes at engine idle
- Three-phase a.c. voltage available—ideal for 120-volt conversion as a power source for mobile d.c. power equipment
- Ball bearings with sealed grease reservoirs—need no lubrication between engine overhauls

FAN AND SHROUD ENCLOSED D.C. GENERATORS

- Totally enclosed for protection against foreign materials
- 12-volt—24- and 40-ampere maximum outputs. 24-volt—15- and 20-ampere maximum output generators available
- Double-life brushes and constant-tension brush springs
- Ball bearings with sealed grease reservoirs—need no lubrication between engine overhauls





POWER SUPPLY PACKAGE

- Rectifies and transforms vehicle generator voltage up to 120 volts d.c.
- Furnishes dependable power up to 1200 watts
- Provides mobile power suitable for incandescent lights, universal motors, d.c. motors, a.c.-d.c. radios, resistive loads without thermostats, or other 120-volt d.c. equipment

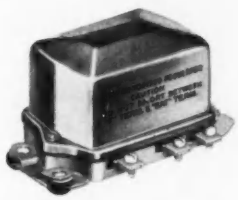
SPECIFY DELCO-REMY POWER-MATCHED ELECTRICAL SYSTEMS!

It's the sure way to prevent downtime and costly repairs caused by inadequate electrical systems. With Delco-Remy's broad line of complete systems and individual components, you can match electrical power exactly to the special needs of your equipment. New design concepts and construction features mean Delco-Remy units last longer, require little or no periodic servicing and deliver more dependable operation under *all* conditions. The particular Delco-Remy system that'll prove

EQUIPMENT ON THE JOB . . .

DOUBLE CONTACT GENERATOR REGULATOR

- Double contacts provide better voltage control—longer service life
- Simplified external adjustment feature quickly tailors voltage to job
- Waterproofing insures long life and reliable operation

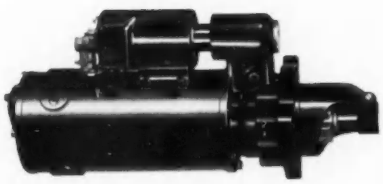


TRANSISTORIZED REGULATOR

- Vibrating type voltage sensor plus single transistor extends service life
- Accurate voltage control at all generator speeds
- Available with simplified external voltage adjustment feature
- Available for either indicator light or ammeter circuits

FULL-TRANSISTOR REGULATOR

- No moving parts to wear out
- Requires no periodic servicing
- Constant voltage control—unaffected by temperature changes, vibration or mounting position
- Simplified external adjustment feature—permits tailoring voltage to operating conditions



HIGH-DUTY CRANKING MOTOR

- New high-performance 12-v. motor eliminates need for series parallel switch circuits with no increase in battery capacity—24- and 32-volt models also available
- Two-piece housing permits 24 different solenoid positions, reduces number of models and spare parts needed
- Totally enclosed drive shifting mechanism is protected against dirt, water, slush and ice
- Heavy-duty sprag clutch remains engaged until engine starts—improves cold weather starting

DC-250 HIGH-DUTY BATTERIES

- Glass mat retainers protect positive plate material—improve cycling ability, provide longer service life
- Resin seals between cell cover and terminal and between case and cell cover protect plates and separators from vibration damage and prevent electrolyte loss
- Newly formulated positive plate material withstands vibration and cycling damage—delivers dependable power during longer life span of DC-250

most economical for your needs depends on your equipment's job and its performance requirements. Ask your dealer about Delco-Remy power-matched electrical systems and specify them when ordering new vehicles. And, to bring your present equipment up to date, contact your United Delco Distributor.

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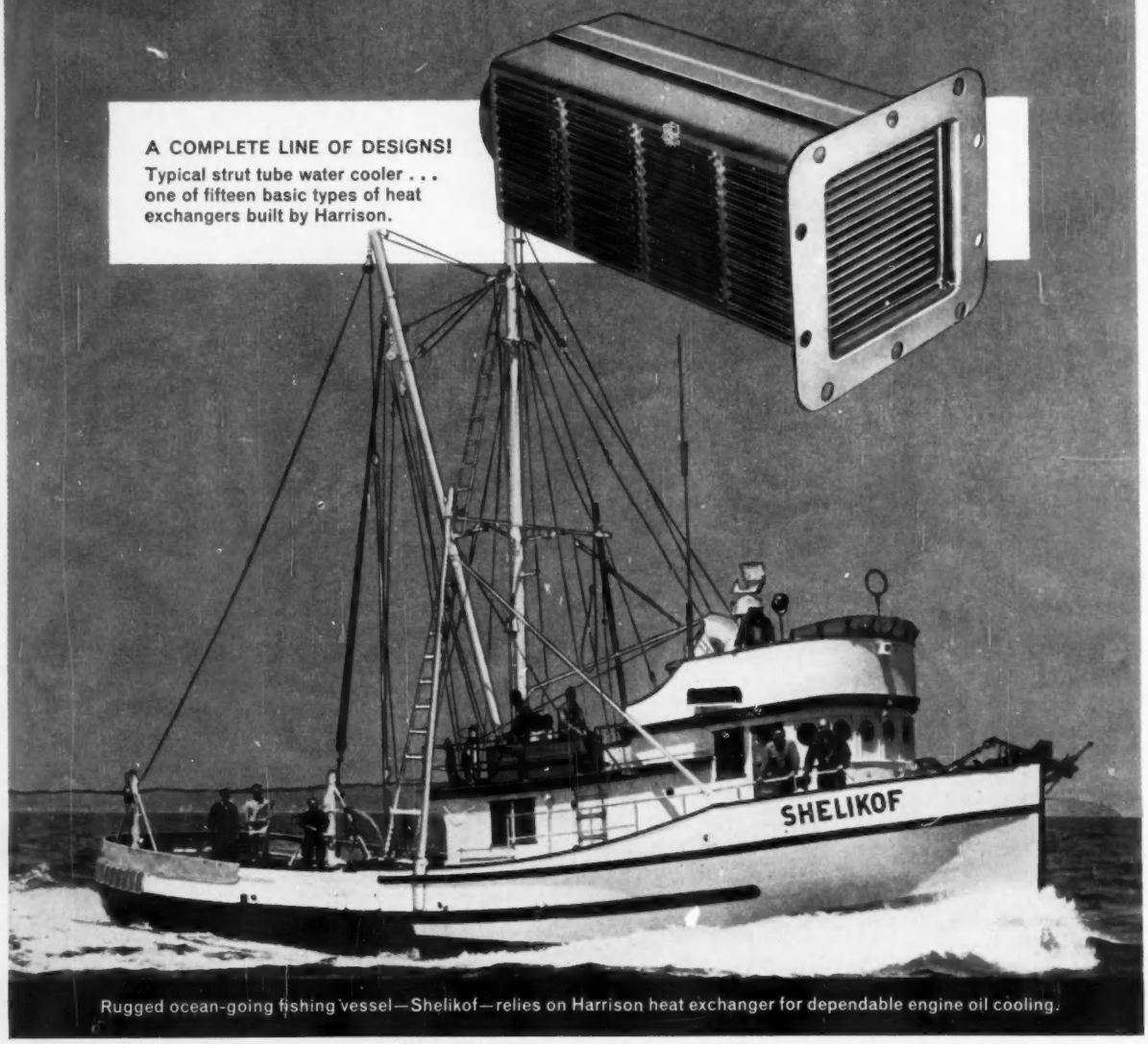
RIGHT...FROM THE START!

When you do business with Harrison you receive, right from the start, the benefit of "broad base" experience in heat exchanger problem solving. Harrison's skilled and knowledgeable engineering team has the unique advantage of past and present experience in many fields to draw upon—automotive, marine, industrial—even aero/space and nuclear applications. It costs no more to let Harrison—the leader in the field of temperature control—help you work out your heat exchanger design and development answers.

A COMPLETE LINE OF DESIGNS!
Typical strut tube water cooler . . . one of fifteen basic types of heat exchangers built by Harrison.



Rugged ocean-going fishing vessel—Shelikof—relies on Harrison heat exchanger for dependable engine oil cooling.

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DIESEL EQUIPMENT SUPERINTENDENT

The man responsible for the selection, performance and maintenance of his company's diesel equipment

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Executive Editor	Len Griffing
West Coast Editor	Paul B. Harder Parsons Building Pacific Grove, Calif.
President	James E. Jones
Publisher	G. Renfrew Brighton
Circulation Fulfillment Mgr.	Adele Hoppe
Production Mgr.	W. B. Williamson
Art Director	Leonard Wahlgren
Representation	
Mid-West	Frank Wenzel, Mid-West Mgr. 605 N. Michigan Ave. Chicago 1, Ill. Rm. 206 Tel: MIchigan 2-5050
Ohio Western Pa. & New York	C. F. (Dick) Tope 12500 Shaker Blvd. Cleveland 20, Ohio Tel: 991-2856
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EPA

EDITORIAL

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Turbocharged Diesel Power! Compare operator (arrow) with size of diesel engine beneath him for a clearer picture of power used to hustle this off-road earthmover. Cast nickel-alloyed parts help deliver extra power, help cut operating and maintenance costs in this heavy-duty turbocharged diesel.

In International's new Turbotorque® diesel...

Nickel-alloyed castings help deliver extra power, cut operating costs

This is International's Payscraper®—powered by International's new UDT-817 Turbotorque® engine, a four-cycle, 370 h.p. turbocharged diesel.

To meet the demands of rugged off-road operating conditions, engineers at International specified nickel-alloyed castings for the engine's critical parts.

For the twin cylinder heads, nickel cast iron was the choice. Nickel cast iron parts have the strength needed for reliable, heavy-duty service—the pressure-tightness demanded by high-compression engines.

For turbocharger casings, Type D-3 Ni-Resist* nickel-alloyed austenitic ductile iron was specified because it withstands internal temperatures as high as 1400° F—shrugs off wear and scaling—stands up to the corrosive combustion gases.

For piston ring carrier inserts, Type 1 Ni-Resist* nickel-alloyed austenitic iron was selected. It assures strength and wear resistance—keeps inserts from pounding out of shape at high operating temperatures.

You'll find that wherever the going is rough, cast nickel-alloyed engine parts assure built-in economy and operating efficiency. They provide the mechanical properties you need to boost diesel life and slash maintenance costs. Whether you build or use heavy-duty diesels you'll do well to *specify* nickel-alloyed engine parts.

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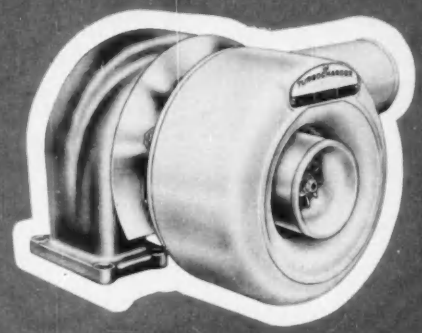

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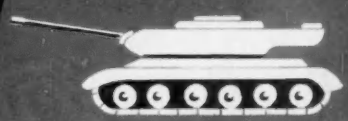

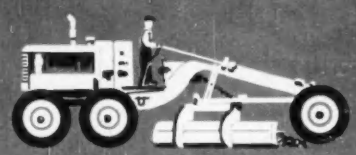

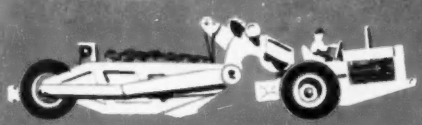

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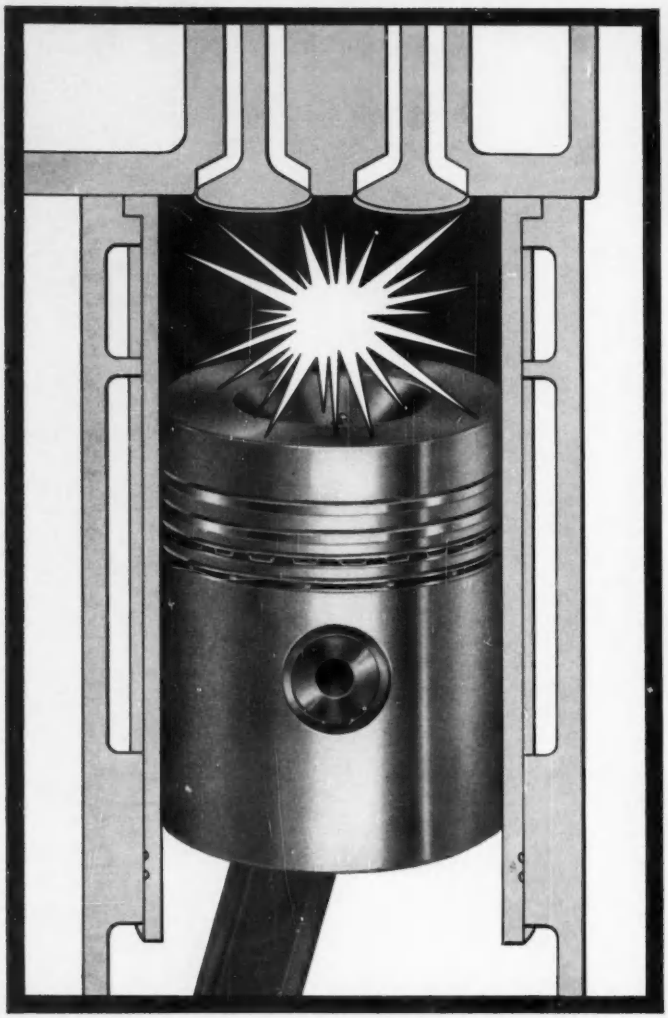
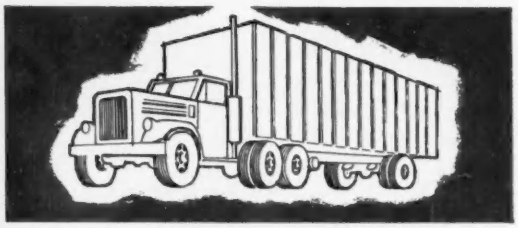
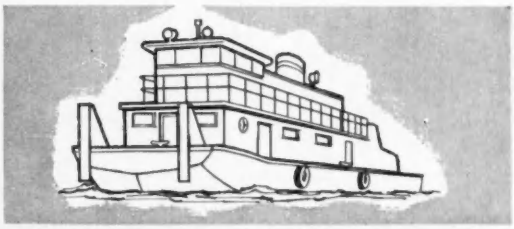
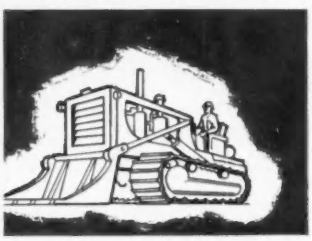




HIGH OUT-PUT ENGINES POUND ORDINARY RINGS TO PIECES





The combustion force in a modern supercharged, high out-put engine pounds ordinary piston ring iron to pieces. That's why Pedrick developed special high-strength Excelloy. This centrifugally cast, heat-treated alloy is twice as strong as regular piston ring iron.

And these tough Pedrick top compression rings are faced with an extra heavy plating of chrome. Prelapped at the factory to assure top protection against abrasion, they give positive sealing with minimum break-in time.

This Pedrick combination—high strength alloy steel . . . heavy chrome facing—assures you of full compression and reduced cylinder wall wear.

If you need rings for the tough applications contact your Pedrick dealer for prompt service.

Pedrick® PISTON RINGS

Manufacturers of Pedrick rings; Superior-Arrowhead and White pistons; cylinder assemblies, valve train parts, oil, air and fuel filters.

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POWER IDEAS from COTTA

Pumping Locomotives Construction Drilling

How to reduce six costs of operating heavy equipment

Totally balanced power transmission fits maximum torque to your type of work.

Heavy equipment users have been known to count engine horsepower closely on a machine . . . then ignore the number of dollars they pay out to keep it working.

Others, quick to measure daily operating costs such as:

1. equipment
2. fuel
3. replacement parts
4. service calls
5. wages
6. overhead

. . . end up with dollars and new contracts in their pockets by selecting transmissions which minimize loss between applied and delivered power; absorb the severe shock loads common to big machine operations.

Add to these the intangible savings in space, weight, engine life, and unnecessary "hardware," and you can begin to judge how *totally balanced power transmission* economizes big-machine operations.

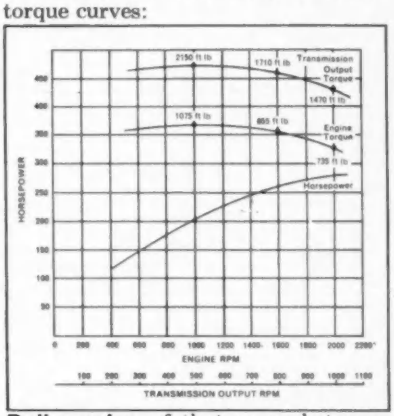
Engine manufacturers advise that an engine of proper horsepower for a job doesn't necessarily have the correct speed characteristics essential for peak operating efficiency on that job. They are among the first to tell you that shrewd selection of power transmission equipment will increase engine performance by permitting it to operate at or near governed speed.

More and more frequently in these days of heavy equipment specialization, a standard transmission matched to individual jobs is the recommendation.

Contractors, loggers, miners, drillers — heavy-equipment users in all fields

— are learning how quickly a Cotta gearbox which matches engine speeds to common loads can pay for itself out of savings.

For example, proper gear reduction can give a diesel delivering 280 hp at 2000 rpm this much difference in torque curves:



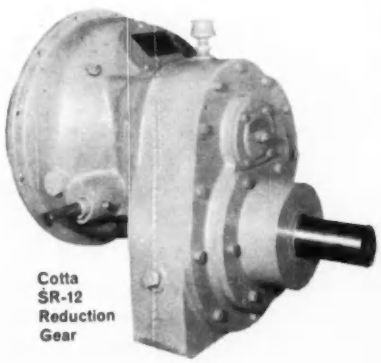
Dollar value of that space between engine torque and job-matched transmission torque curves goes as high as:

1. Maximum engine power at your best fuel-consumption rate.
2. Fewer and lower costs for parts, service, and downtime.
3. Increased productivity, because maximum engine torque develops at speeds most common for your particular application.

Time to save these dollars is during the design stage of your equipment. Our engineers will be glad to discuss whether a job-matched transmission can help you . . . where it can help you . . . how much it can save by decreasing your total operating costs. We will custom-design *even a single unit* to fit your engine applications from 100 to 750 hp.

Standard drives, too — single-speed reduction or over-speed gear transmissions — are ready for prompt delivery. Input torque capacities range from 150 to 2500 ft-lb.

Write for free diagrams, capacity tables, dimensions, and complete specifications. Our phone number is 815 WO 4-5671.



Cotta SR-12 Reduction Gear

COTTA

HEAVY-DUTY TRANSMISSIONS

COTTA TRANSMISSION CO., ROCKFORD, ILLINOIS

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Pioneering?

You don't have to do it.

GM Diesel has done it for you.

Even the newest GM Diesel models have been pioneered and proven to the tune of 90,000,000 horsepower—all developed from *one* basic design.

It all goes back to the big idea that makes the big difference in Diesels: the GM Diesel *family of engines concept.*

One design throughout the line that gives you the most advanced new models with basic components proven by years of use.

One design that delivers the *ultimate in standardization savings on parts and service,* whether you use 1 engine or 100.

One design so unique, all the advances made in the future can be applied to engines in the equipment you buy today.

No wonder, when it comes to power, the world's leading equipment builders—and users—come to GM Diesel. It makes any equipment a better buy!

Detroit Diesel Engine Division, General Motors, Detroit 28, Michigan. (In Canada: General Motors Diesel Limited, London, Ontario.)

GM DIESEL

SERIES 53 & 71 ENGINES

One proven design throughout the line builds greater value into every engine

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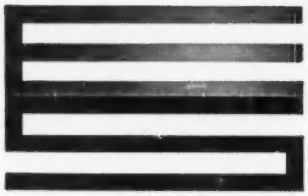

EDITORIALLY SPEAKING

A need . . . and fulfillment

Twenty-three men sat for an hour and a half listening to a well-prepared talk given by an executive from a major engine company. He had come from Detroit to New York for this purpose. The men's interest was evident in the pointed questions that followed the talk. These men are equipment superintendents, members of a maintenance group, and have responsibility for trucks numbering in the thousands. They were spending their own time to improve their professional knowledge. This sort of thing is happening all over the country. Why? Because time and economic pressures preclude possibility of each man developing his knowhow from scratch. He must start from the threshold of accumulated knowledge and experience in his field and go on from there. This has particular bearing on equipment superintendents. Recognition of the importance of their function is growing daily and with it, expectation of top-level performance. Those that grew up in this job function are sitting pretty; the "comers" slated to fill the growing number of such jobs have a lot to learn . . . and fast! Where do they get this knowhow? Here is a real need . . . and in response to it we see equipment superintendent groups getting more active all over the country. By discussing mutual problems and swapping experience, they learn from each other. Soon comes another need—that for infusion of fresh ideas from outside the group. Good programming is one of their problems. Here, manufacturers can help, in fact, are eager to do so. Many of them have good speakers that can give suitable prepared talks or can tailor one to the needs of the particular group. Yet many have shied away from manufacturer's talks because as one man put it, "We don't want a commercial sales pitch that we could get by picking up the phone and talking to the local salesman. We want programs with 'meat' that will help us with our jobs." Manufacturers have them. They can't afford to put on a "whistle-stop" deal every place that there are a couple of men but for organized groups with membership maintaining a significant amount of equipment, they'll be there . . . *if they know about the group and are asked!* Here's what we are planning to help this situation. First, we're asking manufacturers for details of what they can offer, programwise, to these groups. We'll publish this information for your guidance. Second, you men that belong to one of these groups should see that we get details of meetings and who talked about what. A letter will do. We'll publish this data too so that manufacturers will get to know you. Also, other groups can scout your programs for ideas. Thus, by being a catalyst, we can render a real service by stimulating the flow of information and ideas among those most important people—the diesel equipment superintendents!

B.P.E.

WITH ENTERPRISE *TRI-FUEL* ENGINE
JETMORE GETS MORE

- LOW LOAD OPERATING COST
- PAST PERFORMANCE
- INHERENT POWER RESERVE
- SIMPLE FUEL CONTROL (SELECT-O-MATIC®)

Jetmore, Kansas, selected another *heavy duty ENTERPRISE* Engine based on ten years experience.

"Because we have such a wide variation in loads and operate at a load factor of only 45 per cent," said Emery C. Graves, Utilities Superintendent, "we decided on a Tri-Fuel Enterprise. From our past experience we found that the exceptionally low cost of operating an Enterprise at such a low load factor is outstanding."

Operating at a cost of only 3.55 mils per KWH, based on lube oil cost of 70¢ per gallon and natural gas at 22½¢ per MCF, the City of Jetmore's new Enterprise produces 12,570 KWH per gallon of fuel.

There's an economical, *heavy duty ENTERPRISE* Engine for every municipal, co-op or industrial use – for electric power generation, sewage plant power, pumping systems – from 73 to 7703 HP. Available in diesel, dual fuel, tri-fuel or spark ignited gas. Call or write today for full information.

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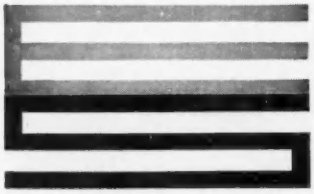


HIGHLIGHTS

FLEET VEHICLES PILING UP THE MILES

Common carrier per/vehicle annual mileage has shown a significant rise over the past ten years . . . In 1950, it was 41,000 miles. Last year, it hit about 80,000 miles . . . This kind of mileage increase indicates the need for continual assessment of the PM program to meet the increased ultilization without corresponding increase in costs. These are higher-speed miles too so assessment of equipment & suitability is in order.

FPC HAD 78 MAJOR PIPELINE CONSTRUCTION APPLICATIONS

78 major (those estimated to cost more than $700,000) applications by pipeline companies proposing construction of transmission facilities estimated to cost $747,542,042 were pending before the Federal Power Commission as of Nov. 1. A good chunk will go for more pumping power.

ONE-OWNER CONSTRUCTION FIRMS ARE DOING BETTER

On the basis of tax return data, only 7% of the one-owner construction firms suffered a loss, as compared to 41% with a loss among corporations . . . Profit margins are higher, too. 14.9%, as against 4.1%. Could the answer be more direct control . . . faster decisions?

PER CAPITA TON/MILES ON THE INCREASE

In 1945, right after the war, approximately 500 ton/miles of cargo were truck-hauled intercity per capita . . . In 1960, this rose to about 1550 ton/miles per capita, a 3-times increase. Wonder why there's more and more trucking?

PERKINS INCREASES DIESEL ENGINE PRODUCTION

A total of 250,000 diesel engines a year are now being produced by the Perkins world-wide manufacturing organization . . . They are supplying 814 manufacturers of road vehicles, agricultural machinery, industrial plants and boats with engines.

ARMY LOOKS TO INDUSTRY FOR KNOW HOW

Major T. L. Patton of the Army's Transportation Corp has been assigned to Pacific Intermountain Express for a year to study trucking methods and operations . . . This is part of the Army's Training with Industry Program . . . He is the ninth such officer to work with P.I.E.

WHITE NEGOTIATES FOR COCKSHUTT FARM EQUIPMENT OPERATION

White Motor Company is negotiating to acquire the farm equipment operations of Cockshutt Farm Equipment, Ltd., of Canada . . . Cockshutt's sales of tractors, combines and other farm equipment totaled about $31 million for 1960 . . . The Cockshutt operation would be merged with that of Oliver Corp., a subsidiary of White.

CUMMINS LICENSES JAPANESE FIRM TO MAKE ENGINES

Cummins Engine Co. has licensed Komatsu Mfg. Co. to produce Cummins diesel engines in Japan . . . Komatsu will use the 180-220-hp engines in the trucks, tractors and other construction equipment it produces.

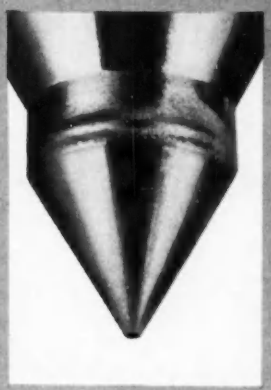
NEWS SECTION

Diesel Truck No. 1
First diesel-powered vehicle in Chevrolet's history comes off the Flint assembly line. Engine is the 4-53. Truck production, which started in 1918 and has accounted for nearly 10 million vehicles, now available with diesels reflects the scope of the diesel's penetration in light load.

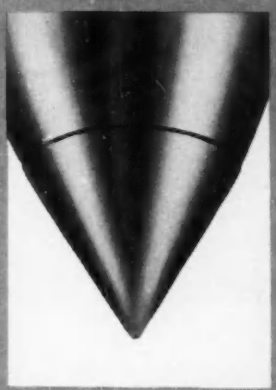
50 New Ones
Carl Ottesen (left), maintenance superintendent of California Motor Express, inspects new units of 50-truck purchase delivered to Los Angeles terminal. BC-162 is a diesel-powered city truck. DCO-405 tractors are for over-the-road.

Service School in Session
Roosa-Master service school in recent session at Parks & Hull Automotive Corp. in Baltimore. School was held for two days. In this picture, Bernie Prue of HMS uses slide projector for class that included personnel from service stations, factory branches and implement companies.

Extraordinary new nozzle development

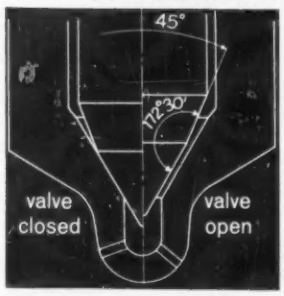


Single cone valve after use



New double cone valve after use

A ROBERT BOSCH exclusive: The double cone nozzle valve seat



Blue print shows new valve seating made possible by the ROBERT BOSCH double cone design.

Here is the first major breakthrough in hole-type nozzle design in many years. What precisely is it? It is an ingenious double cone seat precision engineered to overcome fuel turbulence and resulting cavitation erosion. Closing, hydraulically cushioned to reduce pounding, allows greater valve lift for more flow area. Makes smaller valve seat diameters possible. This patented design which enormously extends nozzle life is exclusive with ROBERT BOSCH, noted for diesel engineering leadership and world-wide service. For complete data write: ROBERT BOSCH CORPORATION, 40-25 Crescent St., Long Island City 1, N.Y. Branch: 225 Seventh St., San Francisco 3, Calif.

See us at the 1962 S.A.E. SHOW; Booth #1316

ROBERT BOSCH FUEL INJECTION EQUIPMENT

For information write in No. 1210

Operation "FOODPOWER"

Geared by Fuller models 5-W-74, R-46 and R-96 Transmissions

The McMillen Feed Division of Central Soya can produce more than one million tons of *Master Mix* feed annually.

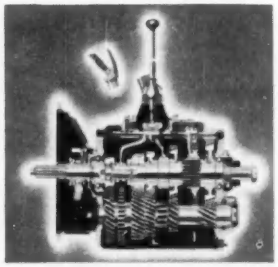
"Good transportation is a must for us," states Harley Donnell, Manager of Central's Truck Department. "Our rigs operate both west of the Mississippi and in practically every state in the East with an average of over 70,000 miles per year.

"Sixteen six-wheel White 9064 TD's with NH-220 diesels and Fuller R-96 ROADRANGER Transmissions are headquartered at Gibson City, Illinois. Another ten such rigs—geared by the same 10-speed ROADRANGER—are stationed at the company's Decatur, Indiana operation.

"Our Chattanooga, Tennessee plant took delivery of seven new International BC-225 Diesel Tractors equipped with 5-speed Fuller 5-W-74 Transmissions late in 1960.

"At our Marion, Ohio plant, eight International R-225's equipped with R-501 engines are in operation. All are Fuller-equipped—with the 10-speed ROADRANGER, and with 8-speed ROADRANGER Transmissions.

"As we increase our fleet, we continue to specify reliable Fuller Transmissions, because we know that they will give us the performance and availability which we must have for our 'Operation FOODPOWER'."



5-W-74 Transmission

FULLER TRANSMISSION DIVISION

EATON MANUFACTURING COMPANY

KALAMAZOO, MICHIGAN

Sales & Service: West. Dist. Branch, Oakland 6, Cal. • Southwest Dist. Office, Tulsa 3, Okla. • Automotive Products Co., Ltd., Brock House, Langham St., London W.1, England, European Rep.

For information write in No. 1211

2 Truck Mfgrs. Adopt Motor Wheel Brake Drum

Mack Trucks and White Motor Co. have adopted Motor Wheel Corp.'s Centrifuse brake drums as standard equipment. In this drum, cast iron is fused to an outer steel shell by centrifugal force.

43rd AED Meeting

The Associated Equipment Distributors 43rd Annual Meeting will be held at the Hilton Hotel in Chicago, Jan. 28th through Feb. 1st. The theme of this meeting is "The Industry Gathers to Plan the Attack on the Profit Puzzle".

FME a Big Success

This year's Fleet Maintenance Exposition was much more successful than last year's. There were 500 more registrations and 5 more exhibitors, all of whom did a bigger job. Exposition required 27% more floor space than it did last year.

Half-Millionth Deutz Diesel

The half-millionth Deutz air-cooled diesel engine has left the assembly line at Cologne. There is now in excess of 25 million Deutz air-cooled horsepower, created by 1.5 million Deutz cylinders, in operation throughout the world.

DCA Gets $2.1 Million Contract

Dynamics Corp. of America announced an Air Force order for 426 units of their generator sets, ranging from 15- to 150-kw. These sets can operate on diesel or jet (JP4) fuel. They will be used for primary power and for emergency standby.

K & R Sign with CE

Kurz & Root Co. announce signing of a $1 million (approximately) contract with the Corp of Engineers covering design and manufacture of 292 diesel generator sets. These will be delivered in '62 and early '63. These 30-kw units will go to aircraft and missile bases as stand-by power.

10 PoweRams to Lee

Lee Way Motor Freight of Oklahoma City has purchased 10 trucks powered by Mack's new PoweRam engine. They'll be put into 73,000 GCW service.

Invitation to Bid

The U. S. Army Transportation Materiel Command in St. Louis has invited bids for the production of four BARC's (60-ton amphibious lighters). These are 61-ft long, powered by four diesel engines.

M-H Trucks Undergoing Field Testing

A number of Marmon-Herrington's new 14,000-lb heavy-duty tractors are undergoing road testing in fleets of common carriers. No specific results are available yet, but the new tractor is doing an excellent job so far on maximum-load long-distance hauls.

Henschel Entering U. S. Market with Big Diesel Hydraulic Locomotive

Henschel will soon make available a 4000-hp diesel hydraulic locomotive to American railroads. Power is generated by two 16-cyl vee-type engines each rated 2000-hp @ 1475-rpm. Top speed is in the order of 100-mph.

NEUC Takes Another Step

A decisive step in the organization on the National Engine Use Council took place at the October meeting, when the Council appointed a managing director. The new director is Paul Lady. A continuous educational program will be carried on by NEUC to advance the use of internal combustion engines as a prime mover.

Mack Changes Production Site

Mack Trucks commenced full-scale transfer of operations to its new multi-million dollar plant at Hagerstown, Md., with ending of production at the Plainfield factory last November 1st. The Hagerstown plant was authorized two years ago, and is regarded as one of the most modern and functional automotive plants in the country. It will produce engines, transmissions and carriers.

Prestolite Alternator Production Expands

World-wide production of Prestolite Automotive alternators is scheduled for the first quarter of 1962. Already in production in the U. S., they will also initially be manufactured in Argentina, Brazil, Canada, Mexico and France. Alternators produce higher output at idle, and are especially important to users of taxicabs, police cars, pickup trucks and vehicles in stop-and-go operation.

Liberian Learns at Fairbanks, Morse

James Moore, senior inspector for weights and measures for the Republic of Liberia, is currently studying American techniques and equipment at Fairbanks, Morse. When he returns to Liberia, he will use what he has learned to train and supervise his staff of inspectors.

Are You Ready for Changing Road Conditions?

Figures published by the Indiana Turnpike Commission show that operating conditions are changing. It's getting easier on the brakes, but harder on the engine. Comparing turnpike with state highway conditions, average road speeds were 40.93-mph and 32.73-mph. This average difference is important when considering engine service. Then, take the brakes. On a comparative run from Chicago and New York, turnpike as opposed to state highway, total brake applications are 194 and 893. Total number of full stops is 58 and 243. This shows that brakes are getting less use, but there may be need for increased capacity, since stops are from higher speeds. In any event, with increased use of turnpikes service demands are changing. It's something for the equipment superintendent to think about.

PEOPLE, PLANTS, PLACES

Volvo Genl. Mgr.

John Jarnmark has been named vice-president and general manager, engine division, **Volvo Import, Inc.**

At New Mack Plant

Joseph I. Andreini has been appointed acting plant manager of **Mack Truck's** new plant in Hagerstown, Md. (For more information see the news section.) He will continue, in addition, to be responsible for manufacturing and truck assembly operations at the Allentown plant.

C-B Names Manager

E. J. Fithian, Jr. has been named manager, locomotive engines, for the **Cooper-Bessemer Corp.** He is responsible for the coordination of sales, engineering, accounting and manufacturing, pertaining to locomotive engines.

Witzky Joins SRI

Julius E. Witzky has joined the staff of the department of Automotive Research at **Southwest Research Institute** as senior research engineer. Known internationally as the designer of over a dozen diesel engines, he has been an authority for over 30 years. He, incidentally, is the designer of the engine for the Mercedes-Benz 180D passenger car.

Zollner Accelerates Diversification With Plant Expansion

Zollner Corp. has started construction of a new 30,000-sq ft addition to their foundry division at Fort Wayne. When completed, it will almost double foundry production capacity. This investment of approximately three-quarters of a million dollars will enable Zollner to continue its diversification program into high-strength aluminum castings for all purposes, as well as for the pistons they supply for most all applications.

Clark Equipment's General Sales Mgr.

Roger W. Robinson has been named general sales manager of **Clark Equipment Co.'s.** Automotive Division. Previously, he was manager of transmission sales. His headquarters will remain at the Jackson plant.

Roger W. Robinson

New EMD Director

Appointment of **Thomas E. Hughes**, former general manager of the **Cleveland Diesel Engine Division**, to the new post of director of marine and government activities for **Electro-Motive Division** is announced by Richard L. Terrell, vice-president of General Motors and general manager of Electro-Motive. Appointment is effective immediately with the consolidation of Cleveland Diesel with Electro-Motive.

I-H Names Sales Mgr.

International Harvester Co. has named **E. E. Krogstad** as petroleum industry sales manager for the company's motor truck division. Formerly, he had been district sales manager at Tulsa. His present position is newly-created within the I-H organization. His headquarters will still be Tulsa.

Climax Names Chief Engineer

Climax Engine Manufacturing Co. announces the appointment of **Albert W. Jordan,** as Chief Engineer. Formerly, he had been assistant chief engineer. He will supervise all engineering and experimental activities and coordinate all problems of installations and applications.

Hercules Purchase Completed

Pursuant to direction given at a recent special stockholders meeting of both **Hupp Corp.** and **Hercules,** the latter became a wholly-owned division of Hupp.

Largest V-belt Manufacturing Plant

Springday Company, a subsidiary of **Dayco Corp.,** by awarding a contract for a 52,800-sq ft addition to their plant, gives Dayco the largest V-belt manufacturing plant in the industry. These additional facilities were necessary, according to Dayco, because of the rapidly expanding V-belt market.

Zollner's foundry, shown with white lines indicating new plant construction.

K & R Appoint Lee

Robert H. Lee has been appointed to the new position director of engineering for **Kurz & Root Co.** He will have direct supervision of engineering at division and subsidiary locations in Wis., Ind., and Calif.

ABA VP Names Assistant

David K. Tucker has been named staff assistant to **Ralph L. Countryman**, vice president and division manager of the commercial sales division of **American Bosch Arma.**

Dayco Marketing Mgr.

Thomas E. Farrell has been appointed marketing manager for the rubber products division of **Dayco Corp.** He succeeds **J. A. Conlon,** who was recently named vice-president for this division.

distributor doings

If you're a distributor and you're doing something of interest to the industry (or something you're particularly proud of) don't keep it a secret. You tell us, and we'll do our best to pass the word along to other interested readers.

Onan Distributor

West Virginia Tractor and Equipment Co. has been named exclusive distributor for Onan products for the state of West Virginia, excepting four counties.

Yanmar Distributor

Stewart & Stevenson Services, Inc. of Houston has named Donovan Boat Supplies of New Orleans as its South Louisiana distributor for Yanmar diesel engines.

A-C Names Two Dealers

Allis-Chalmers Mfg. Co. has named two new dealers, Smith Equipment Co. of New Fairfield, Conn. is Materials Handling dealer for Connecticut (except two counties) and for three counties in Mass.

Miller Equipment Co. of Phoenix, Arizona has been appointed by Materials Handling for Arizona and part of Nevada.

Cummins Distributor

Cummins Engine Co. has appointed Thomas D. Taylor, formerly senior vice president of Consolidated Freightways, as its distributor for Oregon and Southwest Washington. The new distributorship will be known as Cummins Oregon Diesel, Inc., and will operate the locations of the former distributorship, Cummins Diesel Sales of Oregon, headed by R. H. Wills.

New Cat Dealer

Ring Power Corp. of St. Augustine, Florida has been appointed Caterpiller dealer for the northern and central Florida regions, handling sales and service for the territory. Ring Power stores at Tampa and Ft. Meyers will also carry a full stock of emergency parts.

H. O. Penn Adds Three

H. O. Penn Machinery Co., Caterpillar dealer in New York and Connecticut, has added three additional men to its sales force. These men are Joseph F. Schmid, Charles J. Miller, and Garrett R. Hughes.

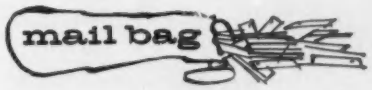
Oliver Distributor

P. M. Burns Farm and Industrial Supply of Clearfield, Pa. has been named Oliver Corp. industrial and construction equipment distributor for Clearfield and surrounding area.

New Branch

Allis-Chalmers is establishing a new farm equipment branch northwest on Lansing, Mich., on Route 16, to serve its farm and utility equipment dealers in Michigan and northern Indiana counties.

Also, establishment of a Milwaukee Material Handling branch has been announced in Brookfield, just northwest of the Milwaukee city limits. This branch serves Wisconsin and Northern Michigan counties.



Likes the New Name . . .

"Your new name and new look for your publication is very good and is something that has been badly needed for years. This approach will certainly add interest to your magazine and help place the credit for keeping the rigs rolling in the proper place."

Sterling Blair
Euclid Div.
GM Corp.

Actually, the major change is in the name; we've been aware of the importance of the Equipment Super's job function for years and have been writing for him.—Editor.

Needs Help . . .

"I am searching for teaching aids to be used in training diesel mechanics. We operate a small industrial school in which young men are taught how to become mechanics.

We need books, charts and filmstrips. Information that might seem old by your standards will probably still be new to us.

We will appreciate whatever help our fellow readers might be able to render."

John Seibert
Box 71 Sangli
India

Pass along what ever you can . . . good will and good business if you're active in this area.—Editor.

Glad That We Help . . .

"All information pertinent to selection, operation and maintenance of diesel equipment is most helpful in designing, operating and keeping our customers' satisfaction in mind. Your magazine is one source of such information".

Henry G. Geer
Chief Engineer
Erickson Power Lift Trucks

Glad that the OEM's find us helpful too. We've got plans to make DES even more valuable.—Editor.

this month's

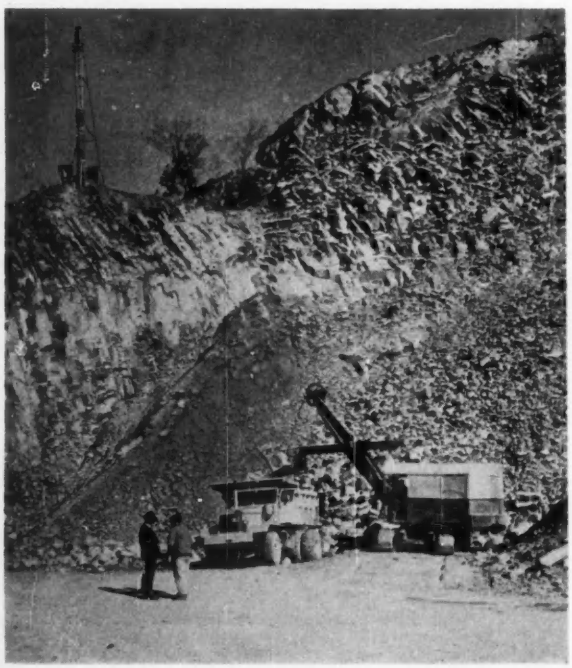
EQUIPMENT SUPERINTENDENT

ROLAND SPENCER
General Equipment Superintendent
C. W. Blakeslee & Sons
58 Waverly Street
New Haven, Connecticut

"Spence" and son "Tim," who operates a truck crane.

"Roland Spencer has grown with the company in its period of greatest expansion, heading the vital job of keeping all our varied equipment "on the line". Down time eats up profits and his progressive maintenance program keeps this down time to a minimum.
Thorough, first hand knowledge of the equipment makes this possible.
Forty (40) years with the company has contributed much to our growth."

R. N. Blakeslee, Vice President
C. W. Blakeslee & Sons, Inc,

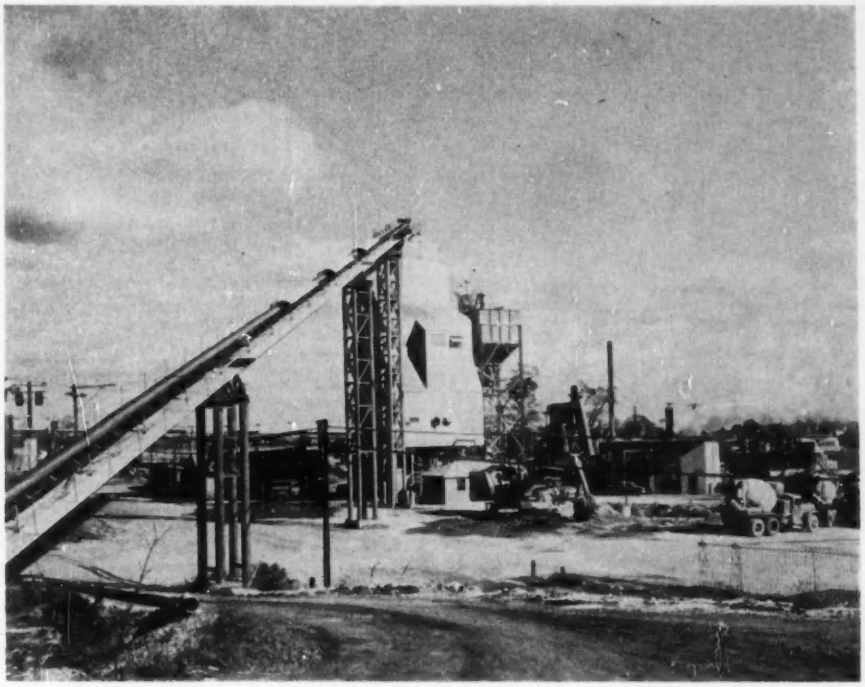


Drill is powered by I-H diesel. Lima shovel and Mack dumper are both Cummins-powered.

"If there's one thing I have learned in over 40 years of maintenance experience, it is that good operations don't just happen . . . they result from planning and tight supervision. It's not enough to know the technical and mechanical things; you've got to be a manager as well."

This was Roland "Roy" Spencer talking. He holds the title of General Equipment Superintendent at C. W. Blakeslee & Sons, Inc., general contractors of New Haven, Conn. The scope of this company's work gives added dimension to Spencer's responsibility. Charles Wells Blakeslee started this business that still bears his name back in 1844. Since the days when Blakeslee oxen pulled plows to break ground in preparation for hand excavation, they've grown to the stature of a major contractor involved in bridge construction, in building dams, roads and other types of large projects.

Not only is this firm active in the spectrum of general contracting but it has several specialized activities. For example, they operate a quarry and crusher to produce crushed stone products not only for their own use but for general sale. In fact, way back when, they built what is credited as being the first rock crusher in this country at West Rock, New Haven. They also operate huge concrete and asphalt batch plants. Also, they have extensive facilities for making prestressed concrete structural forms. Spence has responsibility for maintenance



Cement batching plant. Conveyor carries materials to top for distribution in hopper. Conveyor, incidentally is made from pre-stressed forms. Backhoe is in foreground.

of all this plant as well as for all the normal contractor-type equipment!

Getting Started . . .

Steam and horses were the motive power that predominated back in April, 1921, when Spence started with Blakeslee. Trained as a machinist, he got interested in the new-fangled gasoline engines and worked on them in a garage. He recalls, "I asked Blakeslee for a job and got it. They had 15 to 20 pieces of gasoline-powered equipment and they were in bad shape. In those days, when they moved, say, a compressor out to a job site, it was first taken apart, packed, and then reassembled on the job.

"One compressor had been moved up-state and I had to assemble it. It was a bad actor and had never been able to operate more than one rock hammer. After I got through it pulled three. Compressor valves were reversed, as I recall. Anyhow, it was good for a raise and I've been with Blakeslee ever since."

Transition to diesels started with Model 75 Cats. Spence stated that their performance opened his eyes to diesel possibilities and led to the purchase of more diesel-powered equipment. He stated, "We've also repowered a lot of our equipment, cranes, for example. When we set up our prestressed concrete beds, I ordered the straddle cranes without engines. Diesel Service, Inc. in West Haven supplied GM engines for these.

"Most of our heavy equipment is diesel-powered and we're getting diesels into some of the smaller equipment. For example, all but one of our seven Gradalls have GM diesels for the crane operation. Smaller and better diesels at lower cost are coming out all the time. This is changing the whole picture. I'm not particularly interested in being the first to jump into these things but I keep up on what's happening and when I'm sure that they'll do a job for us, I specify them."

Keeping Abreast . . .

Spence contends that one of the first requisites of the management function of the equipment superintendent is to know what's going on . . . in the whole field as well as in his own operation. The interview uncovered three ways of keeping up with the field: (1) personal study and reading; (2) field contacts; and (3) contact with suppliers.

Item 1 is a matter of reading and assimilating all of the information available pertaining to different phases of his job. This includes everything from maintenance manuals to brochures and ads on new items, as well as his trade publications. It was gratifying to find him a long-term reader of Diesel Power, now DIESEL EQUIPMENT SUPERINTENDENT.

Item 2 brings up an interesting point. All men in Spence's position have some contact with others in similar jobs but time and job pressures frequently limit these contacts. Yet today things are moving so fast that the opportunity to exchange information and learn from others' experience is needed most. One thing to do is formalize these meetings. Spence discussed his affiliation with the Construction Equipment Maintenance Association, a New England organization started a year or so ago.

"This group is currently made up of some of the top maintenance men in the New England area. We felt that we could gain a lot if we could meet regularly to discuss mutual problems. It's currently in its teething stage but interest is so high that men are coming to the

monthly meeting from several states. Two men flew down from Maine for the last one." Spence then stated, "This group has tremendous possibilities. It could eventually break down into state or area chapters . . . possibly affiliate with other regional organizations to form a national group. We need this opportunity for learning if only to bring others along in our footsteps."

Item 3, contact with suppliers, is interesting. The equipment superintendent is the key man for salesmen of everything from engines to filter elements. Their calls are one way to know what's available and new. However, there's another side, bearing on the equipment superintendent's responsibility.

Spence stated, "Every salesman that comes through that door tells me he has the best product in the world. Of course, it's not so. I have to make the decision if the product will help me at all and if so, where there's more than one make offered, which will do the best job for me. This is one place where business contacts such as through CEMA help. You can draw on other's experience."

Setup for Supervision . . .

"Back when we only had a few pieces of equipment and simple ones at that, I could keep on top of everything with only informal records. Today, you need even closer control. In terms of engines, I'm responsible for about 325, both diesel and gasoline, that are scattered over all the jobs." Spence continued, "Control is exercised by a clear-cut PM program, supervisory checks to see that this is followed out, by complete records on each piece of equipment and continual personal supervision."

For good tight operation in view of the scope of the job, all modern techniques must be used. For better record keeping and record analysis, Blakeslee is currently installing IBM equipment. For rapid communication, 2-way radio is used extensively. When Spence is out checking on a job, he is no further than from his car or the radio on the job from his shop or other jobs.

Spence laid down certain principles and ideas to be followed in planning a system and making it work. The first precept is *simplification*. This means avoidance of excessive records . . . have just those you need to get the whole picture and insist that you get them. It also means making it as easy as possible for his men to execute the program.

One of the pre-stressed concrete beds. Straddle-cranes are GM powered. These handle hardened structural shapes.

A good example of this is in lubrication. Requirements in lube oil and greases for all the different pieces of equipment were studied with a view to setting up a standard changeout or greasing periods and use of a minimum number of lubricant types. This might appear wasteful as lubricant quality and changeouts must be based on the most severe service.

However, this simplification pays off in other ways. Inventory of products stocked is reduced; there is no chance of a misapplication goof. An extension of the latter is seen in the fact that fuel and oil for the small 2-cycle air-cooled gasoline engines are pre-mixed and issued in special cans.

Currently, heavy-duty equipment gets oil changes on a 125-hr basis. New machines start off with a filter change every three oil changeouts. As machines get older, filters get changed more frequently. These adjustments are made on the basis of experience.

Trucks get oil changes on a mileage basis, usually following the manufacturer's recommendation. Greasing is done at the same time, both operations being done at night. Here, as with machines on an hourly basis, records come into play. From daily mileage or operating-hour reports, lists of the equipment due for servicing are given to those responsible. Notification of completion comes back to the office and a sticker is put on the machine.

Precept No. 2—*Establish cross-checks.* The system described for lubrication is also a good example of a cross-check system. As Spence put it, "Part of good supervision is to get out to the jobs. It's a good chance to make quiet cross-checks. For example, I know from my records when certain equipment was to be serviced. On the job, I can glance at the stickers or check with the operator.

"Another type of cross-check I've found important is to insure that *all* machine operating time is charged out to the jobs. The operating department picks this off payroll records but I've found that timekeepers can miss. With no record, the machine is listed as idle. Basically, machine operating time is balanced against maintenance costs. Unless all operating time is listed—and in the past I found a lot that wasn't—management gets a distorted picture.

I've set up a board on which each machine is represented. It shows where the machine is, if it's idle, and if not who is operating it. This is checked against payroll data and necessary corrections are made."

Precept No. 3—*Do everything you can to eliminate field problems.* Spence explained this point of view with two examples. One concerned installation of Farr self-cleaning air filters on some of the equipment, notably Jaeger compressors. There's something psychological about servicing these in comparison, say, to a big dozer. The compressor is mentally scaled down in importance yet it can be a very expensive maintenance item. With the self-cleaning filter air cleaner, field servicing is prac-

At the site of an excavation and foundation job at downtown New Haven. Here, clamshell is shown loading a dumper. Sheet pilings shown were driven by diesel pile driver.

tically non-existent and yet the equipment is protected.

The second example concerns de-watering pumps. Before one of these goes out on a job it is checked. In the shop there are two vertical pipe loops in different sizes, each with its water supply. Each provides a 20 to 25-ft head. Pumps are connected and they must pump this head before being sent out. Not only does this insure operation on the job but it cuts field tinkering that can be costly.

The fourth precept deals with control of the parts and supplies and this deserves separate treatment.

Purchase and Inventory Control . . .

According to Spence the first thing to decide is what jobs your shop is going to handle. Are you going to get in to engine and component rebuilding? Are you going to get into track repair? His decision was that there is enough general work—PM checks, adjustments, brakes, damage repair, etc.—to keep his shops busy. Specialized work such as engine rebuilding is farmed out.

This decision is reflected in the items carried in the well-filled stockroom. All commonly-used items from vee-belts to filter elements are on hand in sizes and types to fit all the equipment. Quantities of all the various items stocked are determined by the number of pieces of each type equipment and experience factors on changeout frequency. Spence pointed out that the stock room is an important place to exercise rigid control. You can lose money either by carrying excessive and/or slow-moving inventory or in downtime resulting from not having the item on hand.

What to buy is largely Spence's job. This is done by product evaluation and specification. On parts, supplies and services obtained, Spence has direct purchase authority up to a substantial figure. When capital equipment is involved, Spence sets up the specifications and the performance requirements. A purchasing agent then contacts possible vendors and gets prices. He and Spence go over the data and make a recommendation to a management Board of Review. Rarely is he overruled.

Conclusion . . .

Spence certainly fills our description of the Diesel Equipment Superintendent, "the man responsible for selection, performance and availability of his company's diesel equipment." He is typical of so many men in our industry who are now gaining recognition as the key factor in successful operation. Spence's work and that of these other men is raising the level of maintenance to practically professional status that could be aptly called, "Maintenance Management".

Here's the dispatch board. All equipment is listed here, alloted to jobs. Tags show status of equipment, operator.

Major Heavy-Duty Equipment

150 Trucks Ranging from pickups to heavy-duty tractors for equipment and general heavy hauling. Twelve are diesels, Autocars and Macks. Engines are Cummins NH 200 and 220's, GM 3, 4 and 6-71's.

30 Cranes Of the 18 cranes, back-hoes and shovels on crawler tracks, all but two are diesel-powered. Capacities range from small to 100-ton Lima lifting crane. Lorain and P & H truck cranes (12) range from small to 35-ton capacity.

15 Dozers Mostly Caterpillar D8's and D9's, others International Harvester TD 25's.

15 Loaders Hough and Michigan with capacities to 4-yd. Hough (1½-yd) converted to GM 4-71 engine as start of dieselization.

4 Graders Three Caterpillar, including Model 14, and one Adams unit.

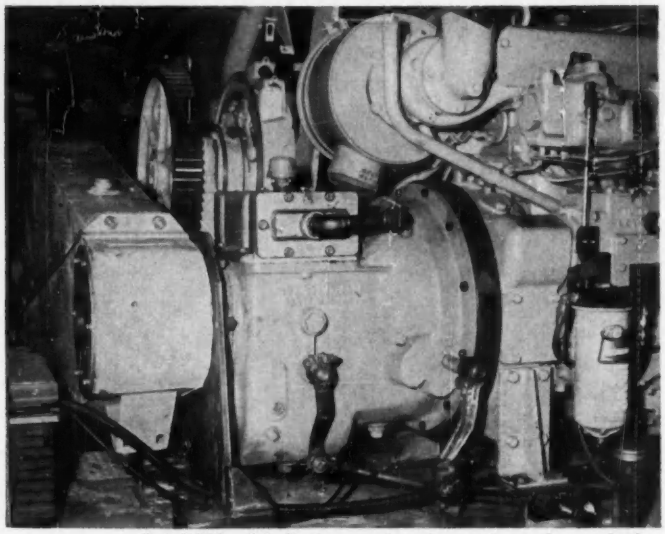
7 Gradalls All but one have GM diesels for excavation use.

19 Transit-Mix Trucks Autocars, I-H's and Macks in 6, 7 and 8-yd. sizes.

Balance of 325 engines maintained are in asphalt and stone spreaders, rollers, compressors, pumps and all other items common to general contracting.

Getting the right power team

by R. P. Wadlington
Cotta Transmission Co.



Cat D320 with Cotta gearbox to meet requirements for multiple drives, clutch, control for drive selection.

Tips on matching engine and driveline to the job . . . and to each other.

Pay-off is top efficiency and lower costs.

You'll get most efficiency out of a piece of driven equipment with the proper engine coupled by proper driveline. You'll save money on operating costs, too.

A diesel engine likes to work at its design speed and load. Correctly geared, it will produce full-rated power, use less fuel per horsepower and keep maintenance costs low.

You may want to change your driving equipment for any one of several reasons. Perhaps it was marginal to begin with. You may want to rearrange the drive to suit a new job or a different location. Or you may want to do additional jobs with a single power source. In any case, you should analyse your requirements to come up with the most efficient and least costly arrangement.

What's Involved . . .

Your driven equipment operates at a torque input and speed established by its manufacturer. For best performance stay with these ratings. Thus, the first requirement is an engine that produces enough power to do the job. The second is a driveline with proper output speed and capacity to handle the power.

Matching optimum engine speed to equipment's specified input speed usually requires reduction gearing. In some cases, you may need step-up gearing. In fact, building up a driveline can present you with most of your variables.

Is your power transfer straight-through or offset? How about disconnect: do you need a clutch? Maybe you'll want more than one gear ratio, which will require sliding gears and provision for shifting. Maybe you'll need a reverse gear, too.

Then there's the power takeoffs. How many do you need, and where do you need them? How many with engine rotation and how many with counter-rotation. What load will these PTOs be carrying? First step is to determine what you need.

Once you know the driveline you want, start thinking about its type of service — what we call its service factor. The rating for a reduction gear used for pumping service will not be the same as for its use in a rock crusher with its high shock loading. We, for example, show the capacities of our reduction gears for three service factors: uniform load, moderate shock and heavy shock (See Fig. 2). Note that rated capacity is determined by the service factor and the torque multiplication as determined by gear ratio. Capacity is stated in pounds-feet of torque.

(To convert horsepower to torque, multiply the horsepower by 5250, and divide the product by the rpm.)

With a specific application in mind, charts of the type shown in Figs. 1 and 2 for the specific items being used will enable you to determine that driveline capacity is adequate for your application.

Last month, this article as published was incomplete . . . two charts were omitted in final production stages. We feel that this article is important enough to our readers to republish it, this time complete—Editor.

A Typical Case . . .

Let's work through the charts with a typical problem. As an example, we'll assume you're repowering for a simple crushing operation with no power takeoffs. You require 1000-lb/ft input torque for the crusher at 500 rpm, and you have a specific engine in mind. Let's pick out the gears.

Go to the chart labeled figure 1, selecting the service factor that matches your operation. Chances are your shock loadings will be heavy, and the machine will be in operation 8- to 10-hours per day. This indicates a service factor of 2. The other thing we need to know is the reduction gear ratio.

Look at the specs for your engine (they're available from the manufacturer). What is optimum rpm? 1500?: let's use it. To arrive at reduction gear ratio, divide engine rpm (1500) by the required input speed (500). Gear ratio is 3:1.

Now we're ready to evaluate the capacities of the driveline components. We show the capacities of our components in a chart that considers both the service factor and the gear ratio, with the result given directly in engine torque. We have a separate chart for each component, so be sure you have the chart for the one you're working with. In this example, lets try our GR-16 reduction gear (capacity chart shown).

After locating your gear ratio (3:1) at the bottom of the chart go up the grid line until it reaches the curve plotted for your service factor. Stop where the lines intersect and, going directly to the left of where you stopped, read the torque value for that point. In the example of your crusher this is 1000-lb/ft.

Is this enough? Go back and check your engine's torque curve. If the GR-16 reduction gear is suitable, the torque produced by the engine should be close to the same value. If the engine will not produce the required torque input, a bigger engine is indicated.

A Few Other Factors . . .

When calculating driveline component capacity, bear in mind that secondary drives can get pretty involved. The example we used was easy—a crusher with no power takeoffs. But in practice there are many complex requirements. What happens when you need four PTOs in mixed rotation driving through right angle drives and transfer cases? Obviously, you can end up with a pretty complicated hookup.

Also, each power takeoff is itself a piece of driven equipment. As such, it can be evaluated on charts similar to 1 and 2. If you have several takeoffs, it would be wise to call for some full-time engineering help. We are certainly willing to supply it.

Making It Fit . . .

Now that you've arrived at all the driveline components that you need, make sure that they will fit in the space available. A 2-speed gearbox is useless unless you have provision to shift the gears, and maybe some of the power takeoffs you require are not available in a standard unit.

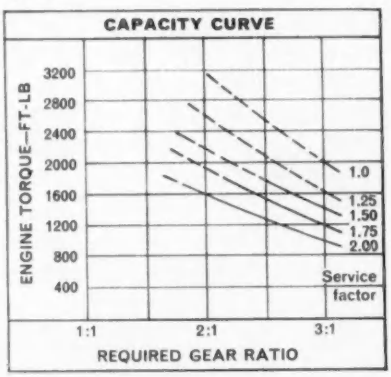
Before you're too quick to shy away from a "special", consider this: it may be cheaper. A standard transmission may not allow you to use the most economical engine. Or, a standard-component driveline drastically modified may be more expensive on the basis of initial cost.

A wide variety of driveline components are readily available. Maybe standard units are all you need. Maybe you can modify standard components or perhaps a specially-designed one is the best answer. But don't make an unnecessary compromise. Chances are, it'll come home to haunt you later when you start adding up the bills.

Figure 1

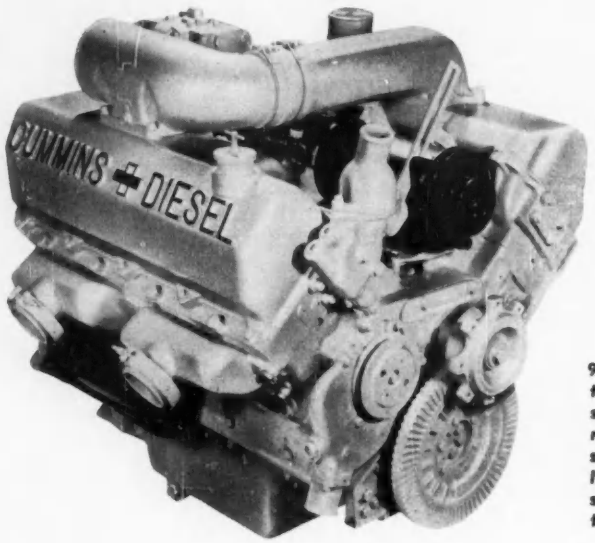
DAILY SERVICE AT FULL LOADS				
Load Characteristics	Occasional ½ hr per day	Intermittent 3 hr per day	8-10 hr per day	Continuous 24 hr per day
Uniform	.8	1.0	1.25	1.5
Moderate Shock	1.0	1.25	1.5	1.75
Heavy Shock	1.25	1.5	2.00	2.0

Figure 2



Two Cummins-powered auger requires a multitude of transfer cases and reductions. "Specials" may be cheaper.

Cummins Builds Two New Vees



90° configuration lends itself to high rotating speeds with low piston speeds. Here, the V8-265.

New design concept provides long service life from a low-stress very-compact high-output package.

Cummins Engine Company has introduced a V6 and a V8 that are directly competitive in size and weight with gasoline engines of the same power. In terms of operating economy, they will operate as cheaply as the NH line they supplement—possibly with even less maintenance.

Design concept is for low stresses, to provide long service life while incorporating use of conventional materials. Most of the lightness is obtained through design. Some aluminum is used, but only as in previous models. None is used in load-carrying members or in areas of high stress. Thus, the high power-to-weight ratio is obtained through design efficiency rather than extensive use of light alloys.

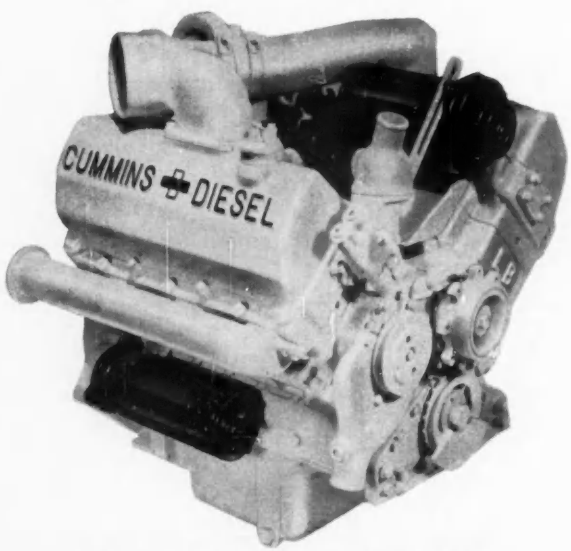
Both the V6 and the V8 are rated at 2600-rpm, a rather healthy speed. Yet, piston speed in this series is lower than that of previous Cummins in-line engines. Stroke is greatly reduced, to 4.12-in. To bring up the displacement, bore is on the big side, at 5.5-in. At rated power, piston speed of the new engines is 1788-ft/min—down about 8% from, say, the NHE-195 engine. This engine has roughly the same power as the V6-200 Weight comparison between the two shows a savings of roughly 40%. Comparative figures are 2435-lb for the NHE-195 and 1475-lb for the V6.

Despite the low weight, design criteria for the vees is longer service life than that of the in-line engines. Comparison shows that these results can be expected.

Because of the higher rated rpm, cylinder pressures (bmep) could be reduced by 6% to 8% below those of the NH models. Thus, exhaust temperatures are lower, by as much as 14%. This, with a substantial reduction in piston speed, too.

The V6-200 and the V8-265 are variations in the same basic design. Bore and stroke are the same: 5.5-in. x 4.12-in. Different rating is a function of the number of cylinders (displacement). Compression ratios are 16.7:1.

The V-design provides a compact package free from external clutter. Even the fuel and lube lines are internal, being drilled passages in the block. Generator, fuel



V6-200, with accessories in the vee. Internally-drilled oil passages reduce clutter.

injection pump and air compressor fit into the recess of the vee, providing both compactness and accessability.

A Few Design Features . . .

Fuel injection system includes the Cummins self-adjusting PT pump, with insert-type camshaft-actuated injectors working into open-type chambers. The single camshaft actuates valves and controls injector operation for both cylinder banks.

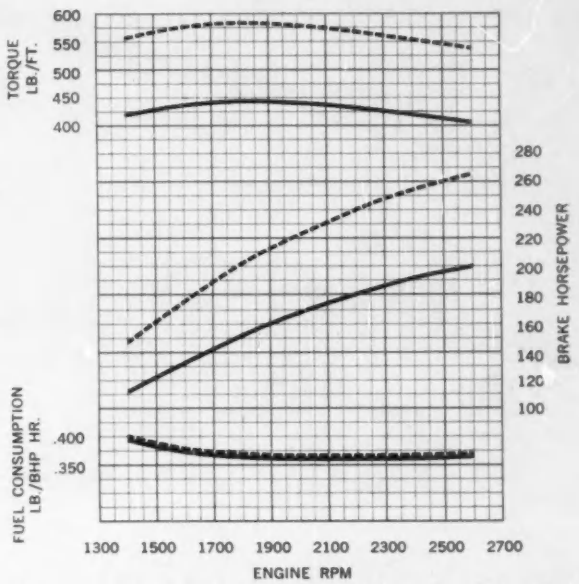
Cylinder head is cast alloy iron, with individual intake and exhaust ports for each cylinder. This reduces restriction to flow, cutting air pumping losses. Bolt-down pattern places six bolts per cylinder to exert even pressure against the gasket. Dual intake and exhaust valves are used, actuated through roller-type cam followers, solid push rods, and rocker arms fitted with steel rocker lever bushings.

Cast iron block uses replaceable wet-liner construction. Crankshaft is counterweighted, induction hardened, with enough metal for several regrinds. Both main and connecting rod bearings are precision-type steel-backed inserts, with main bearing caps cross-bolt supported for maximum rigidity. Con rods are tapered at the pin end, which serves two purposes. Broadening out on the load-carrying side allows more bearing area to reduce pin loading, and the taper allows heavier sections in the piston pin bosses.

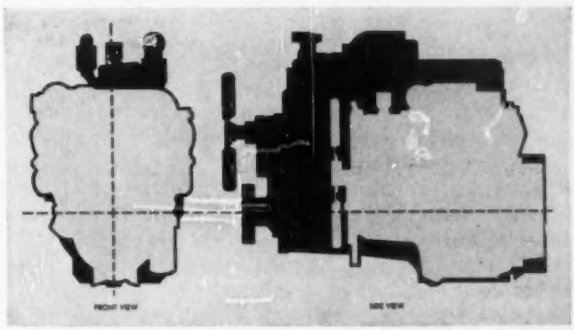
Summary . . .

With bulk, weight and operating costs significant items for over-the-road truckers, the two new Cummins V-engines will offer benefits in all three categories. The Compact design allows more flexibility for axle loading. Savings in weight mean an additional half-ton of payload per trip. Operating economies through low fuel costs and low maintenance costs will be as good as and even possibly better than ever.

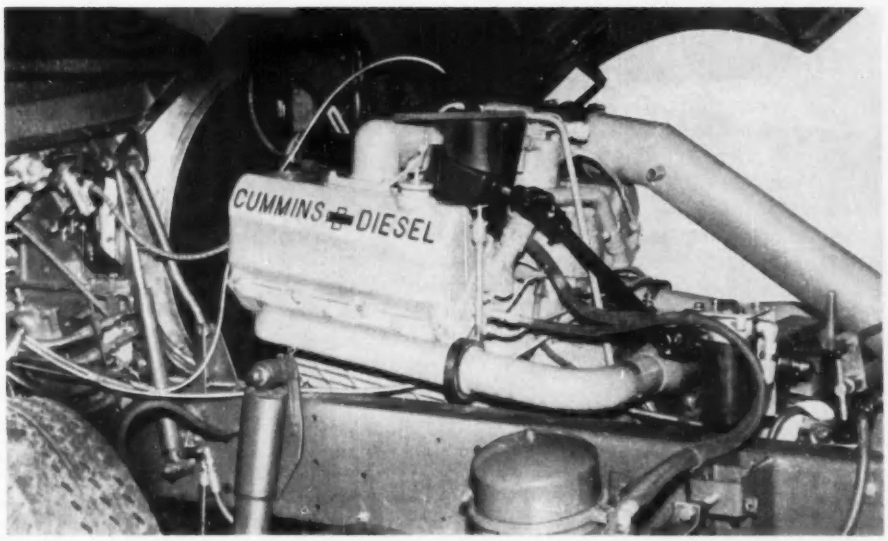
All told, these high-output V-engines promise added benefits to the commercial user. —1230



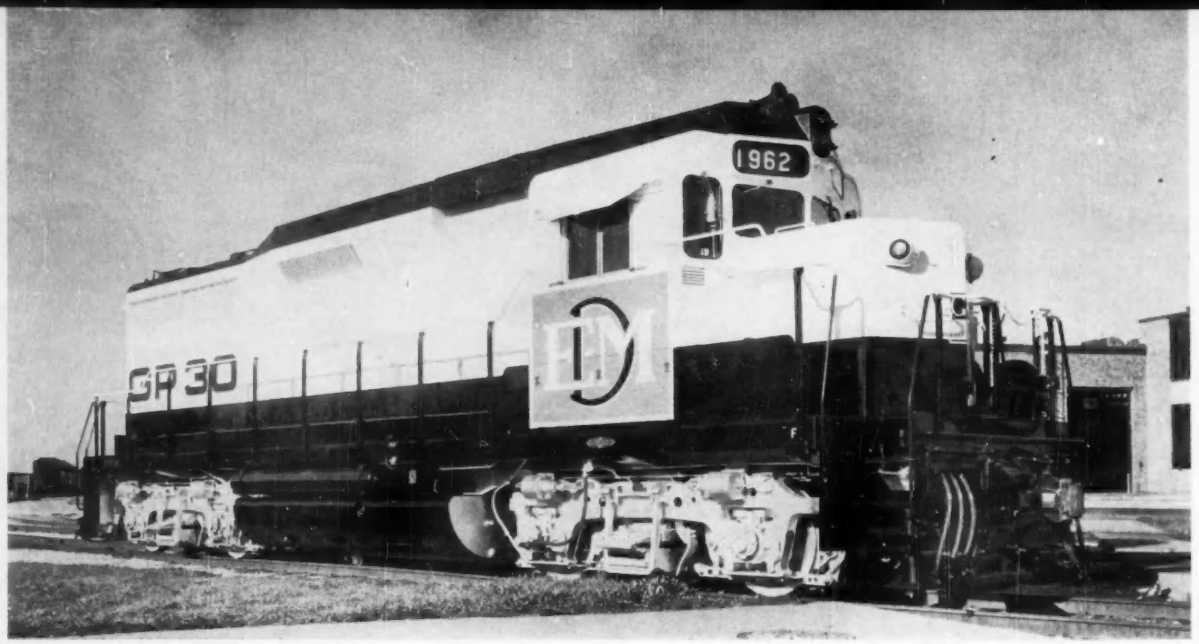
Horsepower, torque and fuel consumption curves corrected to 29.92 barometer and 60° temperature. These curves represent engine with fuel, water and lube oil pumps, air cleaner.



Size comparison of Cummins' vees with standard highway diesel dimensions, in black. They compete with gasoline.



Prototype installation of V6-200 shows that there's plenty of space to fit the engine in. Low weight factor allows truckers to haul extra payload. Transmission is smaller, too, since engine rev range is quite high—2600-rpm.



EMD's New GP30

The latest in a long line of locomotives is a 2250-hp version with wide range, high capacity, low maintenance and low cost factors.

Back in 1959, EMD appraised the possibility of producing a locomotive that would represent a significant advance in design. Decision was made to go ahead. Calling upon a huge pool of accumulated information, EMD designed the GP30. With it, they feel they have met every design objective.

Design Objectives . . .

Starting with the precept that a product is better only if it does a better job cheaper for its user, design objectives were high utilization potential, greater operational capacity, reduced maintenance requirements and lowered costs, including those from initial purchase, operation and value at the end of the service life. Let's look at how well EMD met these objectives.

Wide Range . . .

The GP30 locomotive incorporates improvements in diesel engine and electrical component efficiency, leading to greatly increased utility. Starting with the primary power source, engine is a turbocharged diesel that makes available 2250-hp. This high-putput engine through the D-22 generator provides energy for an improved traction motor, the D-57. The combination of refinements in both engine and traction motors results in applied power that provides a 21½% increase in the operating range of the GP30 over the previous GP-20.

Based on arrangement for a top speed of 71-mph, continuous tractive effort at 12-mph is 50,000 pounds, a 21% improvement. By redistributing the weight, there is virually no need for ballast. Fuel capacity is increased to 2550-gal a 9% increase, and sand capacity to 40-cu ft, a 100% increase. A new wheel slip and load control system provides increased adhesion, increasing the locomotive's capacity over the entire speed range. And despite this increased capacity, overall dimensions are unchanged from previous models.

Reduced Maintenance . . .

Many components of the GP30 have been simplified or redesigned to reduce their maintenance requirements while simultaneously extending their expected service life.

Improved combustion efficiency of the turbocharged engine, plus a 7-element filter, results in a 60- to 90-day lube oil filter change period. This is a considerable increase from the usual 2-week service period for non-turbocharged engines. There are other improvements, too.

Turbo design, for example, had been improved to provide longer life. A turbo lube oil pump starts automatically to supply oil to the turbo bearings during starting, then automatically shuts off. It restarts automatically for soak back after shutdown, removing heat from the bearings. Result is much longer turbo bearing life.

Many other components have been similarly simplified or redesigned to reduce their maintenance requirements. The D-22 generator has extended service life, up 50%. A new central air system eliminates car body filters, yet provides filtered air to the engine, generators, traction motors and the high voltage cabinet. This air system eliminates need for traction motor blowers, which are another maintenance item.

While the filtered air system improves the quality of the ambient air, it does so without maintenance penalty. It is serviced on a once-a-year basis. In addition, air compressor is water-cooled, fitted with a high-capacity crankcase, operates for a full year without add-

oil or inspection. This compressor is capable of 100% load-factor operation.

The high voltage cabinet is sealed on the engine room side. Pressurization, and new static controls that eliminate various electrical devices, contribute to reduced maintenance. The cabinet requires service only once every 5 years. One of the simplification items is a new programming switch that eliminates four transistor relays, 25 interlocks and 10 critical transistor settings. Fewer parts mean less things to give trouble.

This is also true of the truck assembly, where redesign provides a longer service life. Traction motor has new style banding, bearings, commutator and cooling. A new constant-pressure brush holder assembly, a newly-designed support bearing with more oil capacity, and a new gear case are inspected every 30-days, rather than the previous 15-day interval for the older assemblies.

And With Greater Capacity . . .

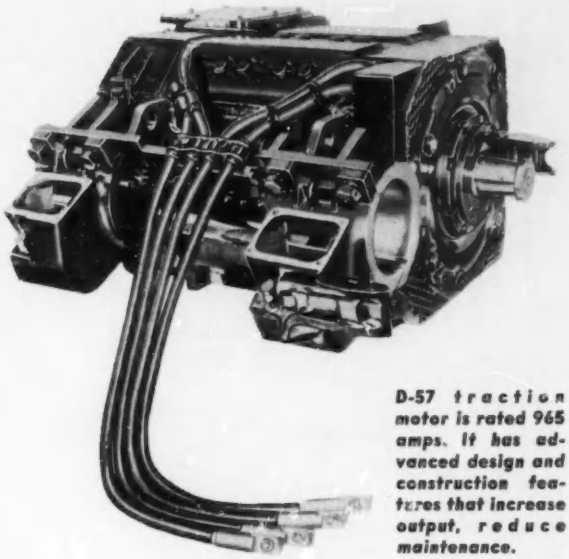
The 2250-hp available for traction represents a 12½% increase over predecessor models, and it allows the GP30 to tackle the big jobs. A big part of this increased capacity results from the efficiency of the diesel engine in the GP30. One example of this efficiency is a BSFC of 0.366.

Modifications to the engine include a new 15-port cylinder liner, a new-design piston, and a new needle-valve injector. These features, matched to the high-output characteristics of the turbocharged engine, allow the operating range of the locomotive to be extended.

Long, hard pulls at altitude, for example, are handled easily. Turbo, which is mechanically-driven at low speed and free-wheeling at high speed, holds the engine to very low power loss at altitude. It produces full rated-power as high as 6000-ft, dropping off only 3% at 8000-ft.

Comparison of tractive efforts of the GP-30 with older locomotives shows an increase of 35%. Over the normal operating range, two GP30s will normally replace three of the older 1500-hp model locomotives.

High-voltage cabinet is sealed, serviced every 5 years.



D-57 traction motor is rated 965 amps. It has advanced design and construction features that increase output, reduce maintenance.

Dynamic braking has been tremendously increased in both capacity and utility. Capacity is upped 33%, and a new control system fitted. This special control circuitry allows maximum dynamic braking effort (which occurs at 21-mph on a 65-mph locomotive) to be extended down to 4-mph. To provide traction motor cooling, engine speed increases during braking from 435 rpm to 595 rpm.

Thus, the dynamic braking function is now twofold. Suitable, as always, for holding or slowing down, it can also be used as an effective stopping brake.

And It Fits In . . .

The GP30 locomotive does not obsolete existing equipment. In line with GM philosophy, older units can be up-graded by incorporating GP30 features. Yet the new model will operate side-by-side with older less-powerful locomotives in any combination or sequence without hazard of overload. This is accomplished by a new dual-purpose power feed block control.

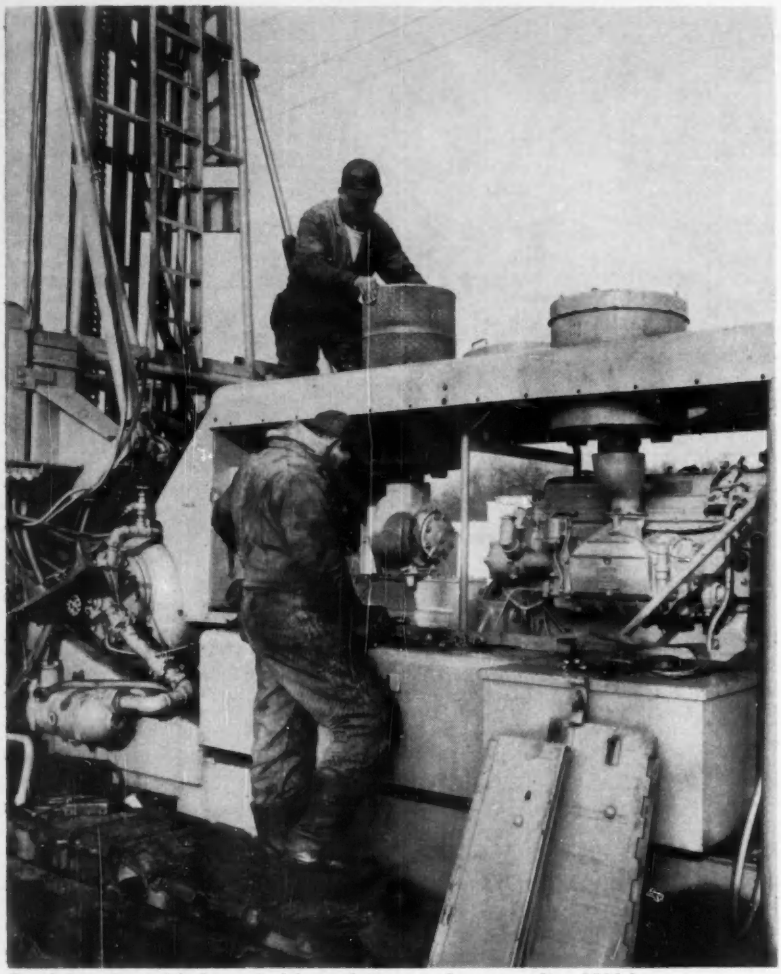
The GP30 also phases into the EMD locomotive replacement plan at lower proportionate cost than its predecessors. Saving accruing to users turning in older units for new GP30s are 25% greater than the savings on, say, a GP20.

Summary . . .

The GP30 is offered at the lowest cost per horsepower in EMD history—$86.89. In addition, many features that were formerly extras are now standard equipment, making the base price still more significant.

Reduced maintenance requirements designed into the GP30 will greatly influence operating costs. As, too, will the low specific fuel consumption. These factors add up to low total costs.

Combine these factors with availability through the EMD replacement plan, and it makes the package even more attractive.



Purolator element is inspected by maintenance foreman after 1000-hr.

No Downtime for Jersey Drilling

A PM system tailored to their unique operation lowers costs by preventing failures.

New Jersey Drilling Company is now in its second year of trouble-free operation with all engine-driven machinery. And they expect it to continue that way. Their preventive maintenance program is based on solid experience.

Development of New Jersey Drilling's maintenance philosophy and practices goes back to 1958. Then, a 3-year plan was mapped out to study the life cycle of engines in the field, and predict incipient failure on the basis of operating hours. In line with their own service requirements, they accomplished this end.

The economics for their service requirements demanded virtually absolute engine reliability in the field. They had to find out how far they could safely go into the engine's total life cycle while retaining this degree of reliability. They found it. They also learned to extend the most reliable segment of the engine life cycle by proper maintenance, properly applied.

What is the Service . . .

New Jersey Drilling Company is a service company with an extensive drilling operation running along a big section of the eastern seaboard. They drill, for example, the holes for 95% of all the quarries in New Jersey.

Reliability of equipment is extremely important, since the basic product the company sells is service.

Drilling rigs with operator and helper are contracted to quarry operators for a specific period of time, based on the number of holes to be drilled and the time needed to drill each one. This arrangement removes from the quarry operator the expense of capital investment for the equipment, and the responsibility for its availability. This responsibility is placed on New Jersey Drilling.

The company operates 11 Ingersoll-Rand Drillmasters, which drill over half-million feet of 4¾, 5-, 6- and 6½-in. diameter holes every year.

Downtime is very costly. If a unit in the field unexpectedly fails, it must be replaced immediately regardless of expense. Thus, the best way to keep expense down is to prevent unexpected failures.

How Far Can The Engine Go . . .

A three-year study of the maintenance records was started back in 1958, to establish the most economical point for complete rebuild. What is the expected failure-free service life of a diesel engine in drilling service? To find out, several engines were endurance tested on the job. Many were operated over 9000-hrs, while one exceeded 12,000-hrs.

But results showed that 7500-hrs seemed to be a critical point. Signs of incipient failure started to appear, and the degree increased proportionately with added use.

While engine life could be expected to 7500-hrs with relative safety, economic demands for maximum reliability in this service dictated a more substantial safety mar-

gin. To assure that only top-performance drilling rigs would be in the field, company management decided on overhaul for every engine on a 2-year or 5000-hr basis, even though an additional 2500-hrs might be obtained without excessive risk.

Evolution of a PM Program . . .

In establishing the balance between an economic and a reliable engine service life period, New Jersey Drilling evolved a preventive maintenance program directed toward reliability. As Don McBride, general manager of New Jersey Drilling puts it, "An extensive drilling operation from Massachusetts to Georgia requires a continuous preventive maintenance program. We have over $1-million worth of drilling equipment and, as a result, everyone in the company has become maintenance conscious."

Operators are trained to watch for trouble. Don McBride continues, "Every drill operator is trained in preventive maintenance, and every man in the company can take a drilling rig apart and put it back together again."

Each operator is responsible for the maintenance of the equipment under his control. He is supplied a complete maintenance schedule with prescribed maintenance functions based on 8-, 24-, 50-, 100- and 500-hours of operation. Daily reports, filed by every operator to Don, report all work done on each machine. This data is then transferred to the master maintenance record.

Every 8 hours the air line lubricator is filled with drill oil, the compressor separator is drained, compressor and engine lube oil level is checked, and the radiator water level, gear box, hydraulic jacks, feed chain sprockets, oil cooler and fuel and lube oil filters are checked.

Every 24 hours the machine is lubed. After 50 hours, generator is oiled, compressor regulator arm and linkage are lubed with engine oil, air hoist gear chamber is checked out, and compressor oil filter is serviced.

At 100 hours, an extensive lubrication and add-oil schedule is followed on all subsidiary motors. At 500 hours, compressor lube oil is changed, fuel filter and strainer element are replaced, and an inspection is made of hoses, generator brushes, commutator, belts, and engine air box is cleaned. Oil is changed on the feed motor unit, propelling motors, dust collector blower gear box, air hoist motor and rotary drill head. An important part of this 500 hour check is inspection of the primary air filter element. The air filters are supplied by Purolator Products, Inc.

Air Filtration is Key to Engine Life . . .

When engines were being run on the service-life determination study, four engines on the drilling rigs were destroyed. High silica-content dust from the quarries passed through the air filters, causing internal abrasion that destroyed the engines.

Two of these engines had been operating for over 3000 hours, one less than 2000, and one was a new engine purchased only two months before. With company rigs in constant demand, loss of availability was a severe blow. Both Don McBride and Emil McConnell, vice-president for operations, took steps to find out what had failed and what could be done to prevent it. They contacted Purolator for technical assistance.

The failures had been caused by dirt getting through the single-element filters. Recommendation was for a two-in-one dry-type filter that would provide back-up should the primary filter fail. These two-in-one units consist of a large treated paper element as primary filter, and a smaller second element for additional filtration if needed, or should the primary unit rupture. Bulk of the dirt is trapped in the primary units, which are checked every 500 hours and replaced every 1000. Secondary filter is replaced at unit rebuild, though it generally doesn't need replacement because of dirt load. Use of these two-in-one units eliminated breakdown from this source.

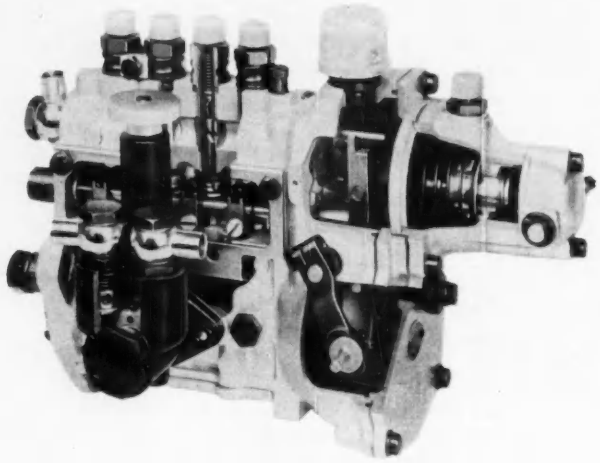
Results are What Count . . .

Since New Jersey Drilling sells service, there's no leeway for not delivering. Shifting equipment to fill gaps created by breakdown is expensive, and not conducive to customer confidence.

New Jersey Drilling feels that the best way to provide service and reduce costs is through a well worked out and properly executed preventive maintenance program where every company employee participates. And they can prove it works. Since they started their PM system two years ago, they have yet to suffer their first field failure!

Regardless of weather, PM is rigid. Each operator maintains his drilling rig. Proper maintenance pays off. An engine hasn't failed in over two years.

RB Goes "Compact" with "M" Pump



A simple low-cost in-line fuel injection pump, proven on Mercedes-Benz 190D engine, is now available for wider use

Robert Bosch 75th Anniversary

This year, Robert Bosch is celebrating its 75th anniversary. From a 3-man shop in Stuttgart in 1886, the company has expanded into an industrial complex that has made significant contributions to automotive development along the path of its own growth.

Of the many ideas that flowed from the Robert Bosch Works, here are a few of the highlights.

1895—Bosch low-tension magneto applied to motorcycle engine, taking it up to 250-rpm.

1897—Granted patent for "make-and-break" low-tension ignition for all contemporary engine speeds.

1901—Development of high-tension ignition suitable for spark plugs with stationary electrodes.

1902—New "Bosch Arc Ignition" appeared on market.

At this point, automotive development and concurrent diesel engine development touched. It started the trend toward making the diesel lighter in weight, to operate at higher speed.

1927—First known "repowering". Development of Bosch fuel injection pump in the same year allowed direct injection, eliminating need for compressed air. Motor car wth 4-cyl Stoewer engine fitted with new pump, converted to diesel operation.

Robert Bosch has been a factor in the diesel engine field ever since. Continuing developments have accelerated the trend toward higher output from a smaller package. Latest product, introduced on this 75th birthday, is the "M" pump, described on this page.

Robert Bosch is now marketing the "M"-pump in this country. Actually, this is the pump that Daimler-Benz has used on engines in their 190D model cars since its introduction some time ago. However, it is only recentl that it has been available for other engine applications.

With the development of smaller, higher-speed diesels, cost of injection equipment has been a growing problem. Along with other manufacturers, Robert Bosch has felt this cost pressure. They feel that cost reduction is not inherent in departing from the in-line type pump; in fact, they say they can make them at less cost than a distributor-type pump. This is probably so in view of their current elaborate tooling and high production. Also, it's not a matter of "sour grapes" as they have a distributor-design ready.

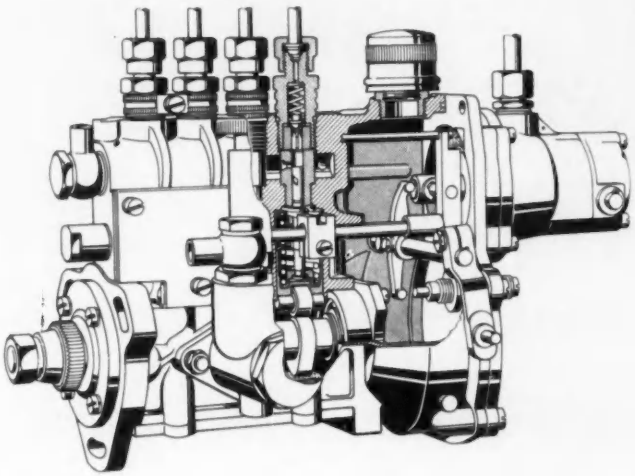
Price pressures are reported highest with the small 4-cyl engines as used in light vehicles and farm tractors. Robert Bosch is approaching this problem not only from the pump direction but to reduce cost of governors, transfer pumps and other accessory items

Like all of the Robert Bosch fuel injection pumps, "M" is an in-line unit. At present, Robert Bosch have committed themselves to the in-line design as a matter of policy. They contend that it is particularly suited to today's higher speed engines. With a pumping element per cylinder each has more time for proper operation and individually does less work than is the case with a single pumping element and a distributor arrangement.

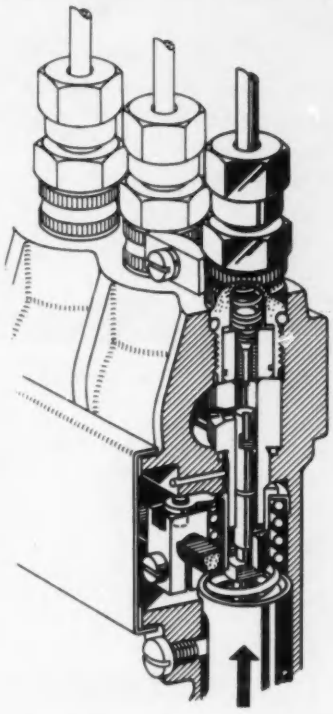
"M" Pump Details

The "M"-pump's principle of operation is exactly the same as for its nearest counterpart, the "A" size, Type PE pump. Design objective was to produce a pump that would be more compact, lighter and less costly and yet one retaining the same quality and service life.

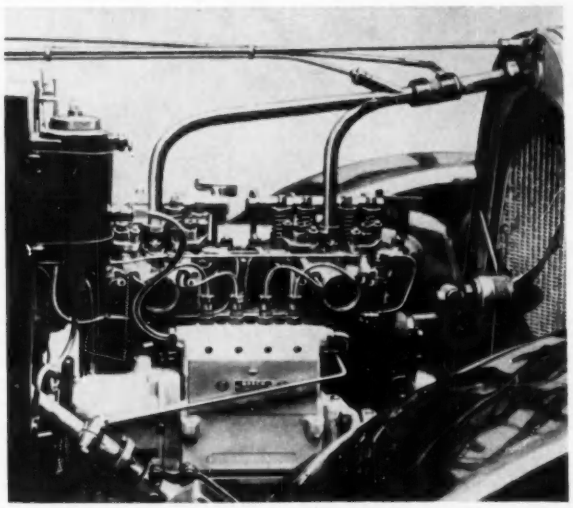
Pump housing and the governor casing are made as an integral die-cast aluminum alloy unit. Every attempt was made to reduce metal sections, consistant with strength requirements. By the closest practical spacing of the pumping element axes, the housing could be shortened.



◀ *"M" pump with pneumatic governor shows close spacing of pumping elements for compactness, and new type fuel transfer pump (left).*



▲ *Typical pumping element with lever control (shown at bottom of drawing). Note serrated delivery valve holder.*



◀ *From the archives of Robert Bosch, circa 1927, first Bosch fule injection pump fitted to a diesel passenger car.*

A short, rigid camshaft is used. Cams are non-symmetrical, the back faces being shaped as a ramp for smooth plunger return. This design also prevents the pump from functioning if running backwards. The camshaft is mounted in ball bearings or for heavy-duty applications in tapered roller bearings.

Common practice in Germany is for pumps to have their own lubrication pump and most of these pumps in service have this type system. For American usage where an engine oil-lubricated system is often preferred, this system is provided. In either case, the lube oil is protected from contamination by plunger leakoff, should this occur. An annulus is cut in the lower portion of the plunger and any leakoff oil is caught and drained back to transfer pump suction through a passage in the plunger barrel. This feature is particularly beneficial where gasoline or light distillates are used as fuel as in the case of multi-fuel engines.

The pumping unit assembly from the tappet roller to the delivery valve has been modified. Aim was to shorten the assembly and simplify it. Overall diameter was also minimized to permit closer spacing. Presently, 5, 6 or 7-mm diameter plungers can be used. Lift is 7 mm. Plunger timing is set by selection of tappet rollers. Five different sizes in 0.15-mm increments can be used.

Instead of a rack and gear segment method of delivery control, plungers are rotated by levers. Outer ends of these levers engage adjustable shoes on the control rod. When balancing fuel delivery among the pump units, the shoes are moved on the rod. This rotates the plunger by means of the lever and thus changes the effective stroke.

The delivery valve is now cylindrical and seals to the housing with a copper gasket. Serrations take the place of the former hex section and are used when torquing the assembly in place. This is one factor permitting closer pumping unit spacing.

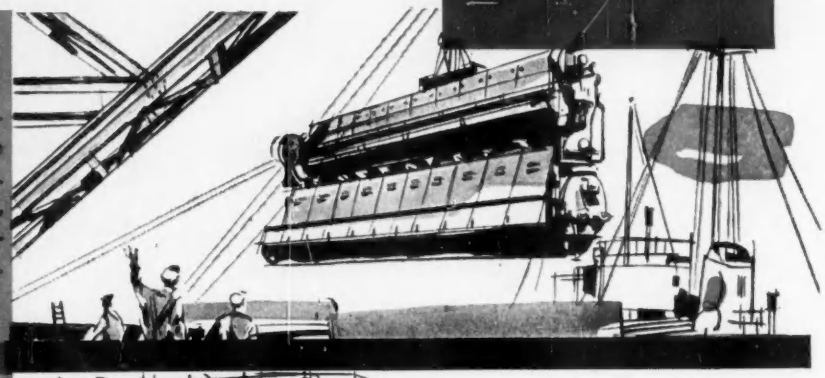
A simplified and more compact fuel transfer pump was developed for use with this pump. Location of inlet and outlet was changed for compactness and new type valves were used. Flow direction can be reversed by swapping the valves. A pressure relief valve on the fuel gallery limits maximum supply pressure.

(*Continued on page 35*)

M·A·N

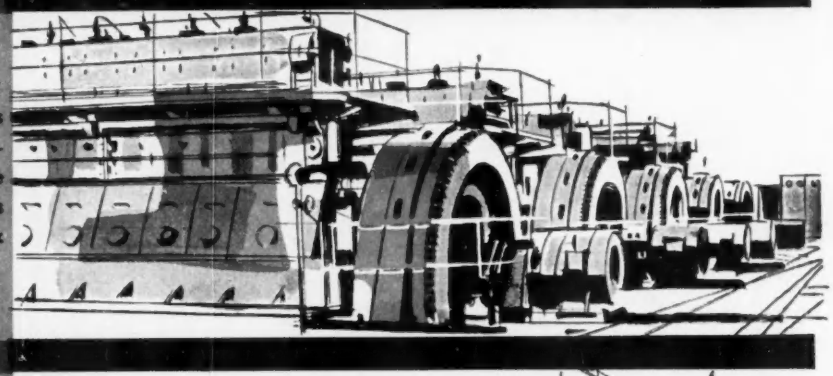
MARINE DIESELS

are built by M.A.N., the oldest Diesel engine manufacturer of the world, up to an output of 22,000 BHP. These four or two-stroke engines, of in-line or Vee design are turbocharged or naturally aspirated.



POWER STATIONS

with M.A.N. Diesel engines or gas Diesel engines require little maintenance. M.A.N. Diesels are reliable helpers for the drive of generators and pumps or for the exacting work in the drilling fields.

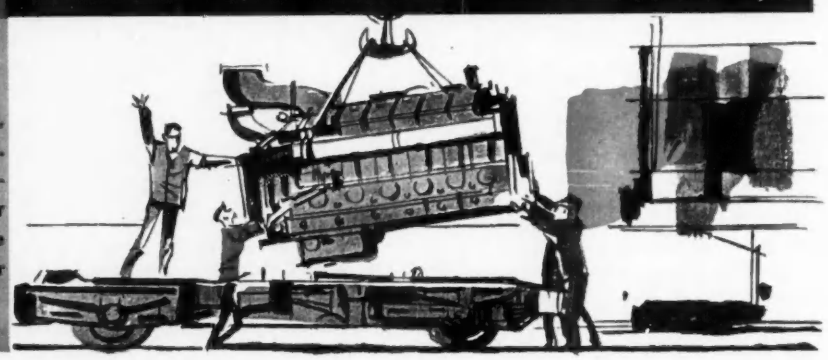


AT BUILDING SITES

perfect service of "mobile power stations" with M. A. N. Diesels starting immediately at low outside temperatures. Mobile Diesel three-phase sets are built for outputs from 14 to 140 kVA.

FOR INSTALLATION

in Diesel railcars and locomotives, cranes and special vehicles M.A.N. engines are provided for direct, hydraulic or Diesel-electric power transmission. M.A.N. have service bases and representatives all over the world.



MASCHINENFABRIK AUGSBURG-NÜRNBERG AG · WERK AUGSBURG

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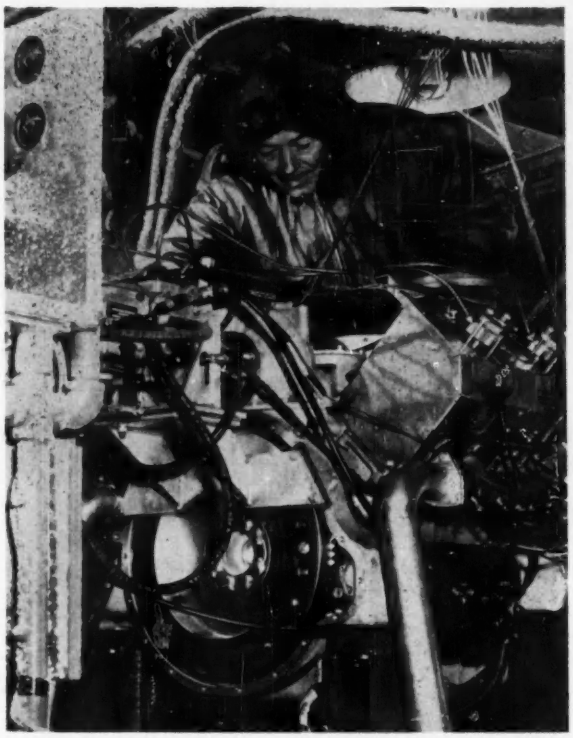


Ready for a start, unaided, at minus 25-deg, the Schweitzer-Hussman design Lycoming engine fires up on low-grade gasoline. Many of the details of this engine are classified.

Lycoming Test Their Multifuel Engine

Lycoming Div. of Avco Corp. has developed and tested for the military a new air-cooled automotive-type multifuel powerplant. Part of the test was a start, unaided, at −25 deg F. on low grade gasoline.

Design configuration is 90-deg vee. This, plus air cooling, results in a compact package weighing-in at between 3 and 4 lb/hp. The 310-cu in. 4-cyl model, for example, develops 160-hp from 600-lbs, with dimensions of 30 x 30 x 28-in.

Six and eight cylinder models are soon to follow, based on the same design and with a high degree of parts interchangeability. Engine is 2-stroke, loop scavenged by a centrifugal blower. Cylinder is an integral aluminum casting with porous chrome bore. Freely-rotating pistons counter any heat concentrations. Combustion chambers are open, each fitted with a glow plug for cold starting. Field changes of complete cylinders reportedly takes about 30-min.

Partly because of its simplicity, engine is rugged and able to stand combat usage. It is based on a design by P. H. Schweitzer and A. W. Hussman.

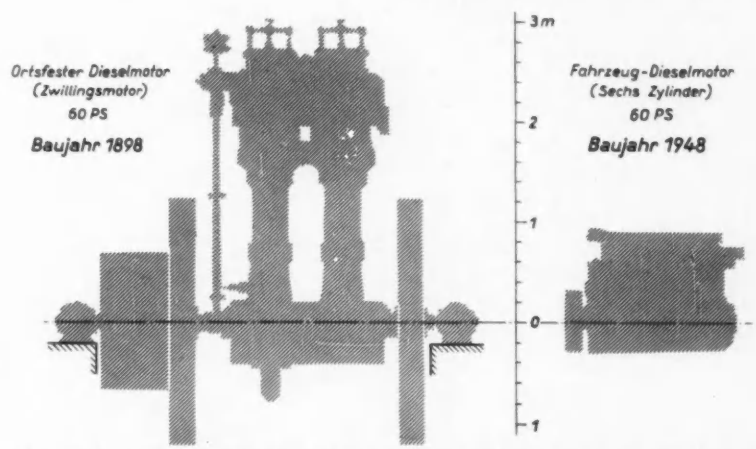
Robert Bosch's "M" Pump . . .

(Continued from page 33)

The most common mounting to date has been with a 3-hole flange integral with the housing. Bearing in mind that this application has been vehicular and on high-speed engines (Mercedes-Benz 190D engine is now rated at 4200 rpm) a pump timing advance device is used. Robert Bosch has an automatic advance unit for this purpose.

Engine speeds for 4-cycle engines up in the 4000 range are no problem as the pump is rated for shaft speeds up to 2500 rpm. Maximum output for the 7-mm plunger is 60 cu mm per plunger or roughly enough for a 60-cu in. displacement per cylinder in a naturally-aspirated 4-cycle engine. Maximum pressure is quoted at "400 atmospheres" or roughly 6000 psi.

These pumps are available with either mechanical or pneumatic governors. Pneumatic governors are used in most vehicular applications. This type governor has the advantage of being the least expensive while still providing suitable governing characteristics. **1231**



If you have trouble reading the German, it simply points out what 50 years of development has done to reduce the size of a 60-hp engine.

REPOWERING:

For the Ford C-600, complete kit is laid out. For this repowering, engine is Chrysler-Perkins six/354.

The Kit's the thing!

Engineered around the Chrysler-Perkins diesel engine, Chrysler M & I engineered kits are complete to the last lock washer. Simple installation lowers cost, gets vehicle back in service fast.

Repowering of trucks and construction equipment continues to go on at a rapid pace with more users getting into it for the first time. Reports from the field indicate that without exception the first repowering attempts by any shops are the hardest ones. After that, they get easier as you go along.

To make it just as easy the first time around, Chrysler's M & I Division has come up with kits that let you slip in half-way down the line. Around each of three Chrysler-Perkins diesel engines, ranging from 47- to 130-hp, they've researched, engineered, built and included every standard and special part you'll need to complete the whole repowering.

User advantages from the kit concept are higher reliability and lower costs. With engineered kits, conversions are practical in your own shops using your own mechanics. Step-by-step instructions guide them and save many hours. With everything included in the kit, there are no parts to "chase". With the time savings, initial costs will be a smaller portion of total costs.

Total costs will be lower, too. Job is completed faster, placing the vehicle back into productive service faster. Thus, savings in both initial and total costs make the prospect of repowering more attractive, since amortization will be faster and less painful.

The completed conversion gives good assurance of long trouble-free life. Each kit is an engineered package of matched components. The "secret ingredient" is a lot of valuable and costly engineering.

What's in the Kit . . .

Each kit is engineered around a Chrysler-Perkins diesel engine in the size suited for its application. At this time, kits are available around the four/203, the six/305 and the six/354. In addition to the parts, each kit contains a set of drawings, a maintenance manual and instructions for the installation.

Actual parts list includes air cleaners, exhaust, hoses, fuel and lube lines, fan, fan shroud, engine mounts—everything including the Perkins emblem. Take a look at the picture of the complete kit laid out. Of particular interest is that all nuts and bolts have American threads.

What Will It Fit . . .

At present, kits are available for the passenger-type vehicles commonly in taxi service, the Chrysler line of small trucks, one Ford model (picture shows this kit, for Ford's C-600), and a few construction/industrial applications.

Conversion kits with the Chrysler-Perkins four-203 engines, directed primarily toward taxi service, are those for the '60 and '61 Dodge Dart; '60 and '61 Plymouth in either standard or automatic transmission versions, and '62 Plymouth. (Plymouth '58 and '59 kits can be had, but are not normally stocked). Kits for all common Checker cabs are also available for either standard or automatic transmission versions.

In the next largest category, built around the six/

305, are kits for the smaller trucks. Kits are available for the '60 and '61 Dodge D-300, D-400 and D-500 trucks.

Kits engineered for the six/354, for larger trucks, will repower the '61 and '62 Dodge C-600 truck and the '61 Ford C-600 truck.

And in Construction . . .

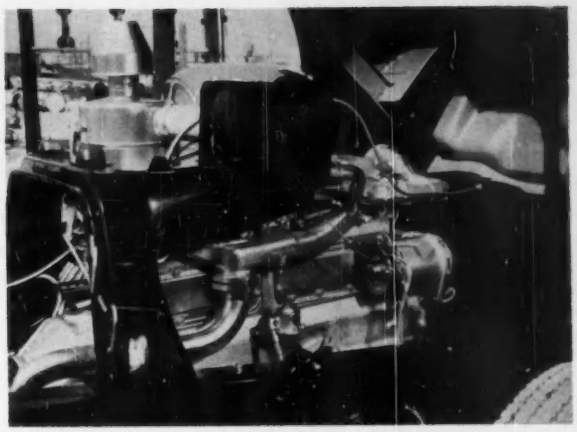
Many construction powering jobs previously tolerating gasoline engine operating costs because of high conversion costs can now be repowered relatively inexpensively. Availability of a complete kit allows the work to be scheduled into the contractor's own shop at his convenience. Costs, naturally, will be lower, swinging the cost-balance in favor of the diesel.

One example is the Chrysler-Perkins four/203 conversion kit for use in transit-mix service. Specifically this kit is aimed at the Rex Mixer, made by Chain Belt. The 203-cu in. diesel replaces a 230-cu in. gasoline engine that is commonly used to power the 4-, 5-, 6- and 7-yd models.

Summary . . .

Some of the more enterprising and more cost-conscious companies have already put these Chrylser-Perkins kits into service. For example, Yellow Cab Company of Philadelphia is always looking for a new cost cutter. You'll recall that about a year ago they put two BMC diesel-powered Austin cabs in service on an experimental basis (Diesel Power, March, 1960). Results showed that the diesels operated very much cheaper.

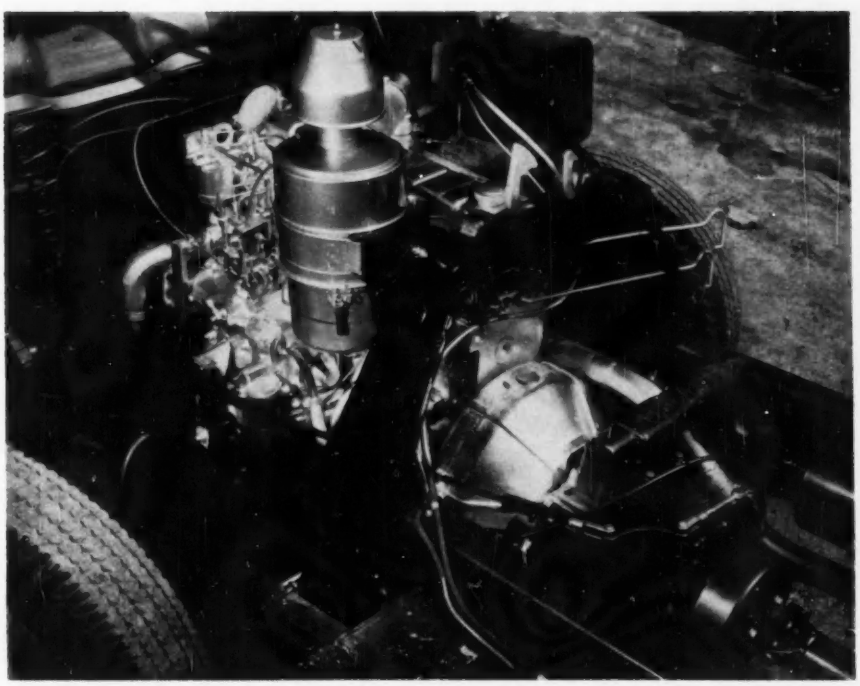
Philadelphia Yellow Cab has already installed two dozen or so four/203 kits in their Checkers and Plymouths. They did the work in their own shops. Reports from J. Charboneau, Vice President—Maintenance, are that the installations went smoothly, and that they will be converting more of the fleet. Fuel and total operating costs are, naturally, lower.



Installed, with cab tilted, there's plenty of room for servicing. Surge tank removes air bubbles from water.

The whole concept adds new impetus to the repowering movements. It helps eliminate one of the major drawbacks—high initial cost—which tended to be a restraining influence on the trend that seemed to be moving forward in spite of it. Now, this restraint is eased considerably.

Present Chrysler-Perkins kits were engineered for and aimed at big potential-user markets. Undoubtedly, there'll be more. Complete information and the kits themselves (with installation, if desired) are available through Chrysler M & I Engine Centers. **1232**

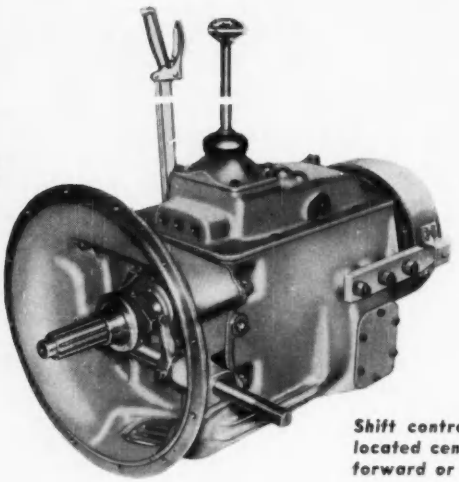


View from rear shows how surge tank and air filter mount on frame cross member. Picture shows that this is obviously a very sanitary installation, with a place for everything and every thing in its place. All the little springs, hoses and clamps are in the kit.

PRODUCT REPORT:

Clark Equipment's 400V Transmission

Integrated lubrication system increases service life in long-haul trucking operation.



Shift control can be located center, forward or remote.

Clark Equipment Company has introduced a 5-speed heavy-duty truck transmission series that is fitted with its own pressure-lubrication system. Purpose is to provide longer service life. A constantly-changing and assured film of oil on friction surfaces and load-carrying points will help to reduce wear.

The new line has been named the 400V series. Available in six models that differ on gear ratios, it covers the 400- to 550-lb/ft torque range. Because of its pressure lubrication feature, it has particular adaptability to long-haul trucking operation where the engine operates at or near peak rpm with the transmission in a high gear for long periods of time.

The Lubrication System . . .

A simple vane-type pump encircles the input shaft of the transmission (see cut-away). The pump consists of a rotor driven by the input shaft, a single free-floating vane inside the rotor, and a stationary housing. This housing is formed by the input shaft bearing cap, which forms an eccentric bore for the vane to contact.

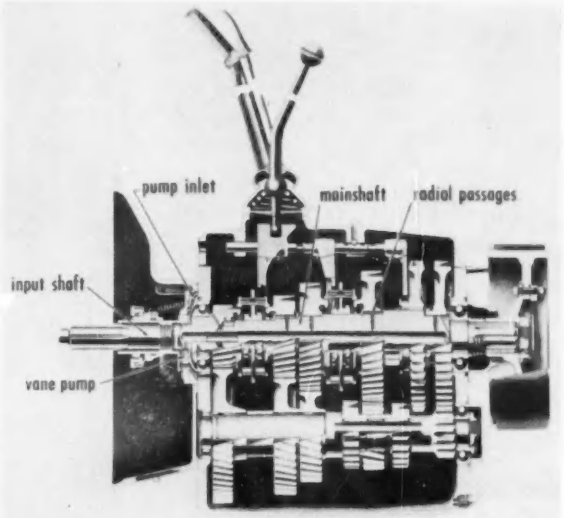
A trough is cast into the inside of the case, and collected oil is fed from it into the pump by gravity. Oil, picked up by the vane, is pumped through the center of the input shaft, through connecting holes, and into the center of the ma i shaft. Pump pressure, now assisted by the centrifugal effect created by rotation, moves the oil through radial passages to the bearing area of the main-shaft gears. Oil then spreads to lubricate all friction surfaces—thrust washers, shaft bearings, main shaft gear bearings. Oil capacity is 10 quarts.

Other Features . . .

A wide variety of options makes the 400V series transmission suitable for a wide range of different requirements. For example, shifting control can be specified either center, forward or remote. Air-assisted remote control is also available.

Parking brake, which operates off the output shaft, can be actuated from either side. The standard unit is a friction band 11½-in. diameter by 3½-in. wide. The renewable friction lining is 5/16-in. thick, adequate for a long life. If desired, shoe-type brake or disc brake can be fitted.

Clutch installation is designed for standard makes. Shaft is 1¾-in. diameter with standard 10-splines. Weight of transmission (without brake) is 442-lb.



Cutaway shows vane pump (left) fed by oil flowing down trough cast into case. Radial passages feed lube to bearings.

Summary . . .

With fully-inte ed p. ssurized lubrication system, Clark Equipment s 400V series transmission was designed to offer significant advantages in long-haul trucking operation. This feature is added without complexity, which makes it a definite plus-factor.

—1233

Models 400 V Series and 400 VO
Ratios through the gears

Speed	400V	401V	403V	405V	406V	407V	408V	400VO
V	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.79
IV	1.47	1.64	1.58	1.43	1.32	1.43	1.16	1.00
III	2.54	2.68	2.67	2.11	1.90	2.11	1.90	1.90
II	4.52	4.33	4.52	3.56	3.56	3.56	3.56	3.56
I	7.83	7.07	7.83	6.17	6.61	6.61	6.17	6.17
Rev.	7.63	6.90	7.63	6.02	6.02	6.02	6.02	6.02

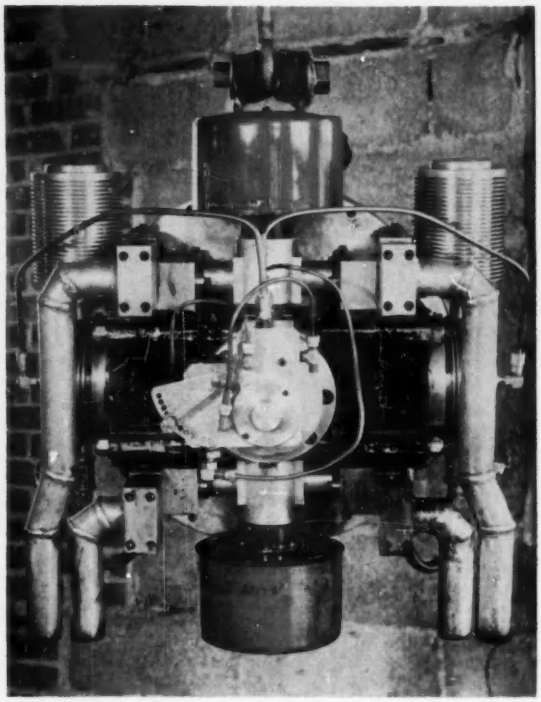
NEW DIESEL POWERED EQUIPMENT

LW 65-ton Truck
Latest addition to the LeTourneau-Westinghouse Haulpak line is the model 65, reportedly the worlds largest-capacity single rear-axle end dump truck. Suspension is by four big LW "Hydrair", instead of axles and springs. Power is a Cummins VT-12-700 turbocharged diesel engine.
1234

One of Four
The new Union Pacific locomotive shown is one of four recently delivered to UPRR by Alco Products. It's Alco's model DL-640, a 2400-hp diesel-electric designed for fast-freight service. It's powered by a 16-cyl turbocharged engine and four traction motors. Switcher is older 1000-hp unit.
1235

New Series Pneumatractor
Schramm, Inc. announces the series 62 Pneumatractor, a compressor/tractor package that provides a multi-purpose unit. It is basically a self-propelled 125-cfm air compressor capable of mounting a variety of accessories including backhoe, loader, rock drill, post driver, tamper, angle dozer blade, rotary sweeper, and so on. Controlled air delivery allows simultaneous pneumatic tool and accessory operation. Available in diesel, naturally.
1236

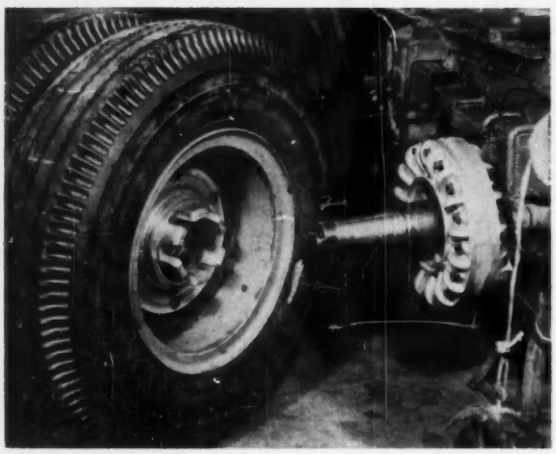
NEW PRODUCTS



Fiedler Diesel Getting Into Production

Fiedler is now setting up for an initial production run of 1000 engines in the 100-hp class on their series 24 (one cylinder's displacement). These opposed-cylinder 2-stroke engines are *really* high-speed, rated at *six thousand* rpm. Output is better than 1-hp/cu in./1.5-lb weight. Previously available only to the military, the first run of 1000 will be available for commercial application. Inherently balanced, with simplified injection system, these engines run at a BMEP of between 55- and 75-psi.

1237



Liquid-Cooled Brake, Retarder

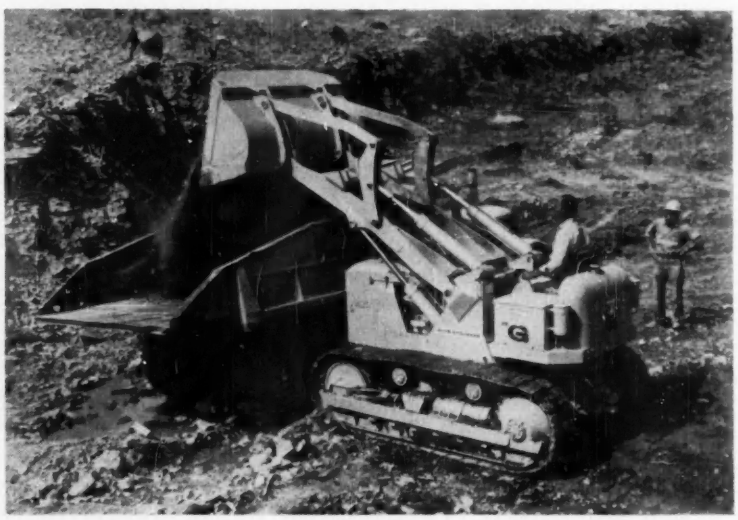
A heavy-duty disc brake for heavy-duty trucks has been announced by Wagner Electric Corp. Brake is just about fade-proof, since expansion by heat is into plane of applied force. Then there's the water coolant, which is pump-circulated from the engine's cooling system. A retarding valve permits brake to function as a retarder, controlled by a selector valve in the cab. Brake is designed for air-over-hydraulic actuation.

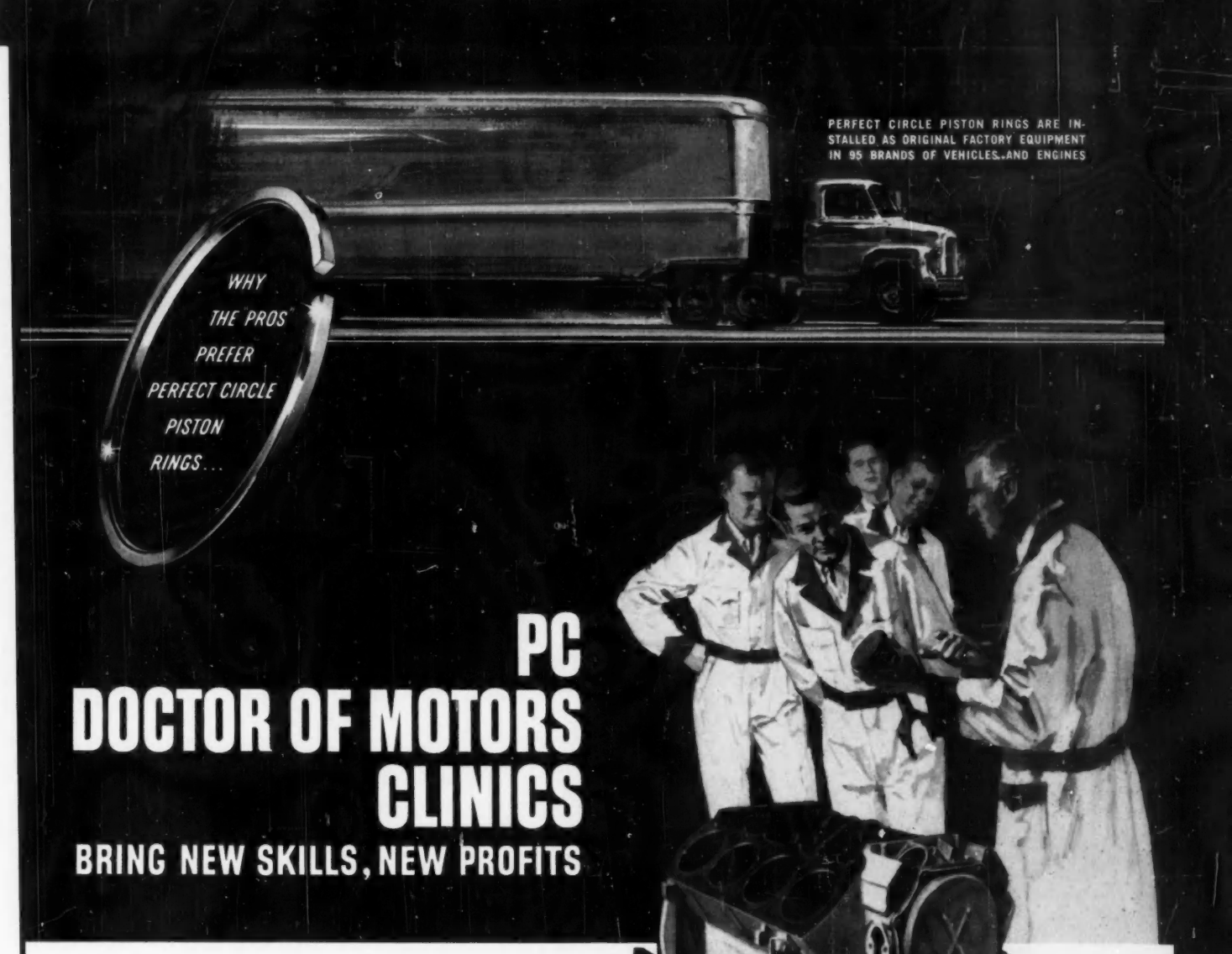
1238

HD-7G Tractor Shovel

Powered by a 100-hp Allis-Chalmers diesel, the HD-7G's torque converter-power shift transmission also features A-C's ground speed control governor. Operator sets for a given ground speed, which tractor holds regardless of load. A wide variety of front attachments increase the utility of the HD-7G, including rock bucket, rock fork, light materials bucket, blades and lifts.

1239

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For information write in No. 1213

Compact Heat Exchangers

For applications where fluid must be closely temperature controlled in a compact heat exchanger, Basco's type 500 line is available in shell diameters from 3¼-in. through 8¼-in., and lengths from 16¾-in. through 79-in. One, two and four-pass models are carried in stock. **1240**

Battery Anti-Corrode

Arsco Manufacturing Co. has developed a product they've called Arsco Anti-Korode, to eliminate unexpected battery failures caused by corrosion. Painted over the corrosion already existing on the terminals and case, the corrosion is dissolved by electrolytic neutralization. Since it does not dry out or evaporate, one application lasts until battery is removed. **1241**

400-gph Steam Cleaner

Aeroil Products' new steam cleaner generates 400-gph of steam at 100- to 150-psi. It features a system whereby chemicals are heated and mixed in a compound tank, then mixed with the steam without passing through either the pump or the coils. Also has low-water cut off and de-sooting systems. **1242**

Portable Dry Powder Fire Extinguisher

Spray Products, best known for its starting fluid, announces its one-shot dry-powder fire extinguisher small enough to be carried on the belt. Chemicals are compounded to be effective against oil, grease, gasoline and electrical fires. Contains no Carbon Tet. **1243**

On Driven Instruments

The Apcor line of products is described in a 12-page catalog published by Actuator Products. The product line includes instrument drives of both simple and very sophisticated design, tachometers, flexible shafts, geared adapters, clutches and actuators. If you've had any kind of a problem with your instruments, instrument hookups or drives, this catalog will help you find a solution. **1244**

Nozzle Fast-Cleaner

The Hartridge Nozzle Multiclean combines air and oil flushing into one operation to provide fast nozzle cleaning. Cleaning time, according to the manufacturer, is seconds. Adapters are available for all standard nozzles. **1245**

Stainless Steel Spark Arrestor Meets Mil Specs

A stainless steel vane-type spark arrestor adaptable to mobile and stationary engines has been introduced by Air Maze. Operating without moving parts, sparks are entrapped because of the centrifugal action principle. Other models are available with aluminized steel bodies and cast-iron vanes. **1246**

Air Slack Adjusters Protected Against Corrosion

Euclid Automatic Machining Co. is manufacturing a line of air slack adjusters coated to make them corrosion resistant. This is applied after all parts are lubricated and precision fitted and adjusted. **1247**

Improved End Connection for Garter Springs

Associated Spring Corporation has developed an interlock connection that secures the ends of their line of garter springs even when springs are stressed to deformation. These springs are used for seals, diaphrams, O-rings, retainers, expanders, and so on. **1248**

Rust & Scale Control

The Grintol Company's newest "Grin" tradenamed product is Protek-tol, a water pump lubricant and rust and scale controllant. Works by cleaning off existing rust and scale, and setting up protection against recurrence. **1249**

To Insure Proper Lubrication

Clark Equipment Co's four new lubricants are the result of research conducted to reduce maintenance requirements of fork trucks. These four lubes cover the entire requirements, from battery care to lubricating the chain, are time-savers in application. **1250**

Dry-type Single-Stage Air Cleaner from Farr

Farr Air Cleaner has added the newest of their line, the dry-type single-stage air cleaner, for highway trucks and medium-duty industrial application. Provides good protection on all equipment with minimum modification. Has large-surface element and Bacharach indicator to show pressure differential, indicate when element needs servicing. **1251**

A-C's D-175 Available

Allis-Chalmers' D-175, rated 49-hp @ 2200-rpm, is now available for commercial use. This engine is being produced at the company's new Harvey Works (see story, this issue). **1252**

High-Duty Battery

Delco's high-duty battery is designed to give superior performance over a longer life span than that from ordinary heavy-duty batteries. It is engineered to deliver good reserve power, withstand repeated deep-cycling and resist damage from overcharging. Constructed to resist damage from high impacts, too. **1253**

"PSU" Test Fixture

Marine Pumps Div. of Diesel Control Corp is now offering the test fixture for the American Bosch PSU pump. This is the latest addition to a long and complete line of test equipment offered by Marine Pumps. **1254**

Improved Ignition

Cleveland Graphite Bronze Div. of Clevite Corp is producing a solid-state device to produce over 20,000-v of ignition energy. Name is Clevite's Spark Pump. Reported to be ideal for gas engines that require a compact source of high voltage. **1255**

All-Purpose Spray Loob

Spray Products, best known for their starting fluid, has introduced a spray can of all-purpose lubricant. For a protective coating, shake the can and aim. Ideal for getting at hard to reach places. **1256**

Pulls Seals Easily

Cam Tool Co's seal puller is designed to pull 95% of all transmission seals, eliminating the need for many different tools. Drill screw taps into the seal, is locked in place, then knocked out by reversible slide hammer mounted on the shaft. Takes only seconds, according to data from the manufacturer.

1257

Mixture Regulator for Gas Engines

Bailey Meter Co's pneumatic computer control automatically regulates fuel-air mixture on gas engines to pre-set values, for specific rpm and load. Installation at Panhandle Eastern Pipe Line Co. showed that savings in fuel alone soon paved off initial investment. Control can be either automatic or manual.

1258

Packaged Field Compressor Line Now Up To 750-hp

Clark Bros. Co. has just introduced their model CFB-4, extending to 750-hp the range of their field compressor line. These compressors are designed for heavy-duty applications where greater capacity and one to four stages of compression are required.

1259

Retaining Ring Plier Line

Owatonna Tool Company has made available a complete line of retaining ring pliers in three basic types: Internal, for rings in a bore or housing; External, for rings about a shaft; Universal, for either type. Within this framework there is a standard plier for assembly work, and a field plier for general use. Various tips and bend angles are available.

1260

Starting Ether in Spray Can

Pressure Products Co. is marketing their nuAero starting ether in a 16-oz spray can designed to provide complete atomization and constant higher pressure in any weather; while retaining ease of handling in can shape.

1261

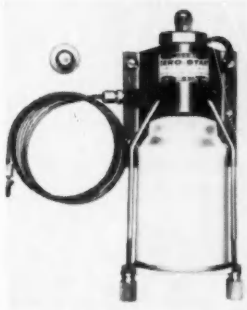
Use your **es** *Reader Service Card.*

Forget Winter Starting Worries with ZERO START

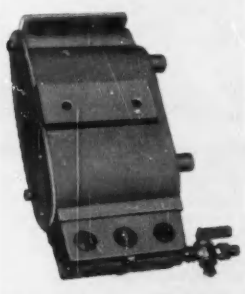
• Engine Preheaters • Starting Fluid Injectors

Starting "right off" on the first turn — even in subzero temperature — is mighty important in meeting winter schedules. Lost equipment-and-man-hours can never be made up . . . not to mention the wear and maintenance problems which cut into cold-weather profit. This winter, put your equipment to work full time with the help of low cost *Zero Start* starting aids. Start 'em sure, fast and easy — any day of the year — and save money doing it. No more engine warm-up time, towing expense, equipment damage, dead batteries or frayed tempers when the mercury dives. There are a variety of quality-engineered, ruggedly built Zero Start preheaters to fit your operation and put an end to winter starting worries.

A full line of starting aids for all types of equipment...



Diesel Starting Fluid Injectors —starting fluid released into manifold by simply pressing a dashboard-mounted button. When engine reaches operating temperature, automatic shutoff prevents further use—and misuse—of unit. Uses replaceable, standard aerosol can. For diesel and gas engines.



Propane Gas Block Heaters— Operates on propane gas. Will burn all night (or longer if necessary). Keeps warmed coolant circulating throughout the engine. Summer-like starts even in the coldest weather. Easy to operate—durable . . . for any liquid cooled engine.

External Tank-Type Preheaters —Just plug into an electric power source. Coolant is warmed and circulated throughout the entire engine for instant starts. 450 — 500 — 850 — 1000 — 1500 — 2000 watts. With or without thermostat. For liquid cooled engines. Head Bolt Heaters also available to fit most models.

For complete information — write

PHILLIPS MANUFACTURING CO.

For information write in No. 1214

Boiler with a Brain

Clayton Mfg. Co.'s new model R-175 steam generator automatically indicates any cause of safety shutdown due to ignition failure, or shortages of water, fuel, electricity or combustion air. This model delivers 5000- to 6000-lb/steam/hr at both high and low pressures.

1262

Zero Start Preheater

Phillips Mfg. Co. announces the addition of two new electric external tank-type heaters to its line of Zero Start engine preheaters and starting fluid injectors. Rated at 1000 and 1500-watt, new models have an epoxy base to guard against rust and corrosion. Thermostatic controls are optional. In operation, engine coolant is warmed and circulated throughout the engine by thermosyphon. Wattages available are 450, 500, 850, 1000, 1500 and 2000-watt in either 115 or 230-v, to fit any liquid-cooled engine.

1263

Sleek Generator Unit

Stewart & Stevenson unveiled a generator unit designed for aircraft ground servicing at the Ground Equipment and Maintenance Facilities of the Air Transportation Association in Washington, D. C. The unit, which is self-propelled, weighs only 5000-lb, is designed for 400-cycle AC power, 12v DC or 28v DC.

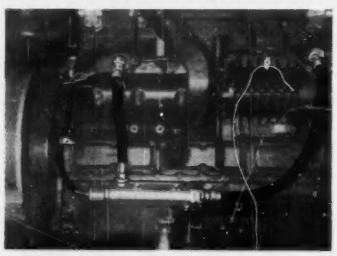
1264

144 Variations

144 variations from one basic spur gear hydraulic pump have been developed by Romec Div. of Lear, Inc. This is the POO hydraulic pump series, whose performance range is from 2- to 100-gpm @ 2000-psi @ 2000-rpm. Economies of production have been effected by multiple use of many parts. For example, the POO5 (5-gpm @ 2000-psi @ 2000-rpm) is converted to a POO7, with a flow of more than 7-gpm, by changing only internal parts—the gears and the bearings.

1265

KIM HOTSTART Diesel and Gasoline Engine Pre-Heater



CUTS COSTLY COLD WEATHER DELAYS

KIM HOTSTART assures instant starts . . . instant peak performance in below-zero weather when commercial power fails. KIM plugs into electric circuit, draws cold water from engine, heats and circulates coolant through engine.

Easy to install . . . inexpensive to operate, Kim Hotstart quickly pays for itself because it prevents cold weather damage, reduces wear and costly down-time.

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For additional information, see your dealer or write direct to Kim Hotstart.

KIM HOTSTART
West 917 Broadway
Spokane 1, Washington

For information write in No. 1215

Lightweight Tool Line

Proto Tool Co. is offering a line of lightweight high-strength hand tools made of heat-treated aluminum alloy. They are claimed to be equal in strength to steel, while offering the advantage of 43% less weight, an asset when tools must be transported or carried, or where they must be used in awkward locations or positions.

1266

Non-Electric Float Valve Safety Control

Engine protection against loss of coolant is available through use of a liquid level sensing device added to California Controls' Calcon line. Installed in the cooling system, float mechanism activates shutdown or alarm devices at the first sign of trouble.

1267

Galvanic Action Rust Preventative

Devcon Z contains 95% zinc and 5% epoxy binders. Applied almost like a paint, it stops rust by allowing the zinc to be the sacrificial metal. This protects the base against damage from scratches. No mixing, single container. Applied by brush, can be used as a paint base.

1268

LPG Flow Volume Computer

Computors, Inc. is marketing an LPG flow measurement system that corrects volume for variations of gravity and temperature, with continuous readout. Volume reduction (shrinkage) is automatically calculated. Model 257 is claimed to have better than 99% measurement accuracy.

1269

Fuel Additive for Increased Combustion Efficiency

Fuels Research Service is marketing their DFS-1000 diesel fuel supplement to affect economies of operation through complete combustion. The manufacturer states that over 50 million miles of testing indicate that the additive breaks larger fuel particles into smaller ones that burn completely, providing less fuel consumption and lower wear. The supplement itself burns completely, leaving no ash.

1270

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Versatile Truck Crane

Stanco Mfg's. HIAB 193 hydraulic truck crane features greater lift capacity and increased versatility. Easily installed behind the cab of any truck or tractor, one man can lift or place a wide variety of items on or from the truck. Has vertical lifting and boom swing. Maximum lift is 3000 lbs, 190° swing boom, working range 18- to 21-ft above ground.

1271

Oil Condition Indicator

Gerin Corp.'s oil condition indicator mounts near the dip stick, allowing attendant to check oil condition at a glance, while he checks the oil level. Three zones are indicated, and show when it is necessary to change oil because of dilution, or when to change the filter. A third zone indicates that both must be changed. Fully compensated for temperature, unit is 2 x 4 x 5½-in.

1272

Washer for Fleets

Ross and White Co. has introduced a washer with a working principle that makes it adaptable for use in fleets, consisting of tank trucks, dumpers, etc. Called Oscillaspray, odd shaped vehicles are cleaned by a nozzle arrangement engineered to oscilate at high speed.

1273

Flow-Rate Tester

A portable testing instrument for quickly and accurately locating the source of trouble in a malfunctioning hydraulic system has been announced by Owatonna Tool Co. Called the Flo-Rater, it measures by the positive displacement method, requiring no conversion factors. Rate of flow, temperature and pressure are gauge indicated. Can be used in shop or in the field.

1274

Engine Block Heaters

Phillips Mfg. Co. announces addition of two new propane gas engine block heaters to its line. Both operate exclusively on propane, fit liquid-cooled engines. Coolant is warmed, circulated through engine for fast starts in cold weather. Each unit is designed for low-cost operation.

1275

Webster's Dictionary defines the term "Genuine," as "Actually coming from the alleged source or origin." Diesel Engine Manufacturers place great emphasis on their "Genuine" Replacement Parts. These same manufacturers, however, use countless parts made for them by independent factories. These parts are sold as "Genuine," and therefore enlarge the definition to include, "Anything coming from their own package."

It is the QUALITY of a product that counts, NOT the label on it. Kermath Engine Works warrants that its replacement parts equal or surpass the original engine manufacturer's quality standards. Subcontractors who produce parts for the world's leading diesel engine manufacturers are Kermath's sole suppliers. If Kermath cannot provide a PERFECT PART at WORTHWHILE SAVINGS, that part will NOT be included in its line.

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For information write in No. 1216

NEW LITERATURE

Flexible Cushion Couplings

Dodge's Para-flex flexible cushion coupling line is described in a 24-page bulletin. These couplings absorb vibration and compensate for all combinations of shaft misalignment and end float. Data includes ratings, dimensions, weights and prices; includes engineering drawings and full product descriptions.

1276

Control Catalogs

United Electrical Controls has two condensed catalogs that list the purpose and all pertinent data on their line. Catalog 400 treats of temperature controls; 500, pressure-vacuum controls. Many of these are special purpose, the kind you can look for a long time.

1277

Perfection Mobile Heaters

New two-page technical bulletin, MP9A1, describes the MH series of mobile heaters for personnel, cargo or equipment heating as produced by the Perfection Division of Hupp Corporation. These heaters provide instant fresh-air heat on trucks, buses, trains, boats, construction equipment, emergency vehicles and other mobile equipment for passengers, operators, window defrosting and cargo, or for quick engine warm-up. Low cost, operate on any common liquid fuel including diesel oil. Completely safe. Fuel shut-off is fully automatic if the heaters fails to ignite. Combustion burner is enclosed, no flame is exposed. All details and specifications with dimensions for all three models can be found in the bulletin.

1278

Don't Gamble With Profits

Clayton Mfg. Co. has made available a booklet by the above name. Describes the type of testing that can be done with a chassis dynamometer, guaranteeing on-the-road performance before the vehicle leaves the shop. Result is reduced labor costs and only top condition vehicles on the road.

1279

Front End Loader

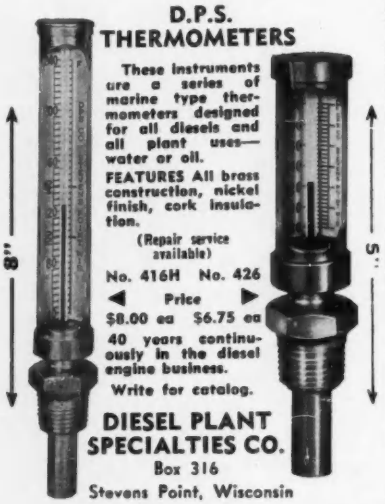
A new full-color bulletin has been issued by Eimco on their 126 front end loader, which features power shift transmission, torque converter, dual final drives. Contains full specs.

1280

Don't Get Stuck in the Mud

Why use floation tires is answered in a booklet "Sink or Float," available from Harmo Tire and Rubber Co. This booklet spells out pretty clearly the advantages of a tire that floats over soft ground, rather than sinking into it. A few of the tips might help you.

1281



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pressure indicator

gives compression and firing pressures faster

The Model K-100 Kiene Pressure Indicator accurately measures compression and firing pressures — assures proper maintenance of diesel engines — helps prevent costly down time. Only one moving part—no friction or inertia effects—no complicated adjustments. Steel carrying case and service tools included.

Send for Bulletin K-100

KIENE DIESEL ACCESSORIES, INC.
10352 PACIFIC AVE., FRANKLIN PARK, ILLINOIS

For information write in No. 1224

U-Joint Bulletin

A 6-page bulletin describing the Twin Disc-GWB "J" series of universal joints has been issued by Twin Disc. Lists complete specs, including dimensions, capacities, length. These are for heavy-duty application ranging from locomotives to crawlers.

1282

Electric Plants for Fallout Shelters

Kohler Co. has issued a 4-page pamphlet which explains the value of an independent power source for emergencies, and tells how to select the right power plant. Kohler, which manufacture sets from 5- to 115-kw recommends a 2- to 5-kw set for fallout shelters.

1283

On Multifuel Engines

The complete story on Detroit Diesel's development of a multi-fuel engine line, in the 20- to 650-hp range, is being offered. It also includes information relative to converting standard GM diesels to multifuel operation. This you should know about, so send for a copy.

1284

Facts of Tractor Shovel

Yale & Towne have issued a spec bulletin on their model 114 Trojan tractor shovel, listing the standard and optional equipment.

1285

US Axle Has New Catalog

The US Axle Company has a new Catalog No. 20 that gives a complete breakdown of their line of shot-peened axles for cars, trucks and buses. Listing is very complete and gives such data as type and number of splines, length, spline diameter, flange and bolt circle diameters plus the number and size of holes for each shaft.

Another publication is their "Serviceman's Guide" that describes and illustrates different types of failures. Used as a guide, it will permit analysis of the reason for failure so that correction, if needed, can be made before axle replacement.

Still another brochure tells of the company's "Custom Engineered" axle shafts, made to specification. It outlines materials and processes used in production of these shafts.

1286

Test Equipment

Marine Pumps, Inc. has issued a new catalog describing fuel pump, injector and governor test equipment for aircraft, marine, railway and transport diesel engine overhaul shops. Also useful for gas turbine shops. There are now 14 basic models of Unitest equipment, as well as specialized equipment. This is a must for the fuel injection shop.

1287

"Euc" Scraper

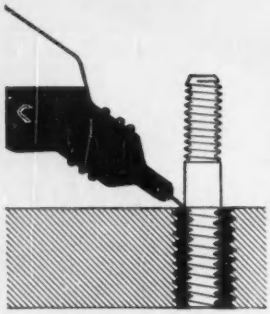
Euclid's S-24 scraper (24-yd struck, 32-yd heaped) is described in a new 16-page 3-color folder. Contains exploded and cut-away views to explain the basic features, including the GM 12-cyl 432-hp engine.

1288

Compilation of Rental Rates for Construction Equipment

13th Edition of the above titled "green book" has just been released by Associated Equipment Distributors. It lists national rental rate averages for construction equipment. Better send for a copy, since 43% of the equipment listed shows an increase from last year; 44% a decrease.

1289



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A "nut and bolt" type fit is all that is required when Loctite Sealant is used to hold studs in place. Loctite's locking action, developing after stud is in place, eliminates need for interference fits . . . and breakage due to high driving torques. No blind hole tapping—drill clean through . . . Loctite seals and locks in *one* operation.

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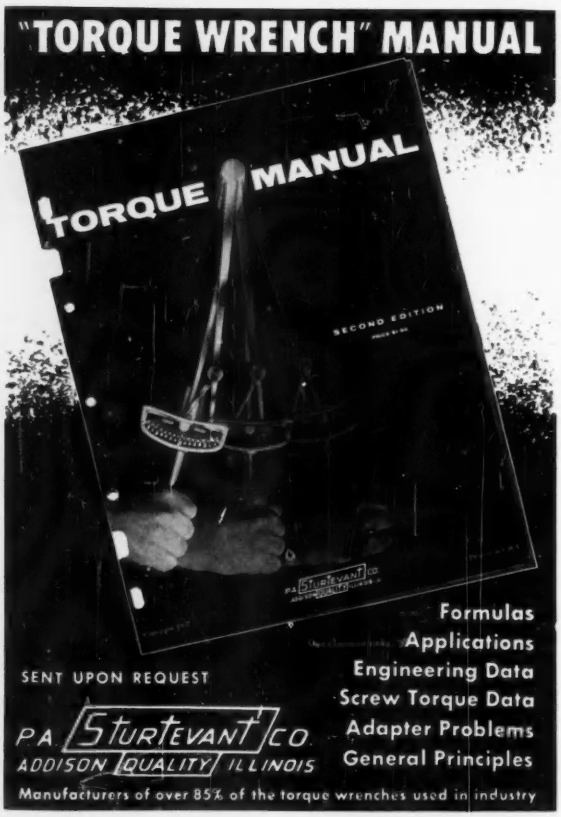

For information write in No. 1226

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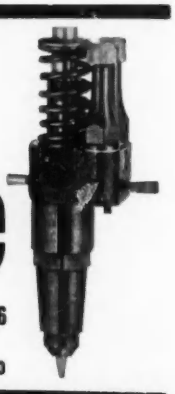

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